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DEVOTED TO TEXTILE WET-PROCESSING

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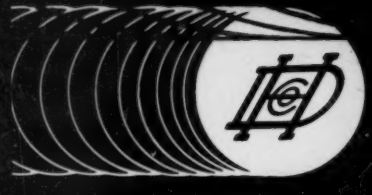

THE HILTON-DAVIS CHEMICAL CO. DIV.
CINCINNATI 13, OHIO

Producers of Dyestuffs and Pigments

Proceedings of the
American Association of Textile Chemists and Colorists

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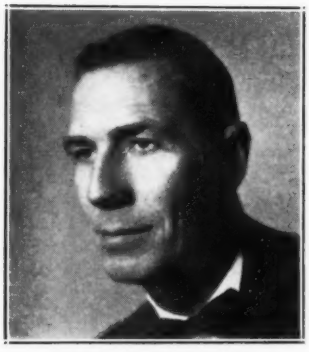
November 30, 1959 No. 24

HELMUS ELECTED FOR SECOND TERM
Parks, Anderson, Gaede and Jones Elected VPs



WELDON G HELMUS
President

W GEORGE PARKS
Vice President
New England Region

A HENRY GAEDE
Vice President
Southern Region

C T ANDERSON
Vice President
Central Atlantic Region

JOSEPH H JONES
Vice President
Western Region

WELDON G HELMUS, Fair Lawn Finishing Co, has been reelected president of AATCC, according to an official count by the tellers. Mr Helmus will begin his second term on January 1.

In the balloting for vice presidents representing the four Regions of the Association, there was only one contest, that in the New England Region where W George Parks, Univ of Rhode Island, was elected. Dr Parks was opposed by J Edward Lynn, consultant.

In the Central Atlantc Region, incumbent C T Anderson, Ciba Co, Inc, was elected for a second term by unanimous vote.

A Henry Gaede, Laurel Soap Mfg Co, was elected vice president from the Southern Region. He will succeed H Gillespie Smith, American Cyanamid Co, who is completing his third year in the post. Under the AATCC Constitution, which does not permit more than three years consecutive service in the position, Mr Smith was not a candidate for reelection.

Joseph H Jones, Phoenix Dye Works, was elected vice president, Western Region, by unanimous vote. He will succeed Elliott Morrill, The Best Foods, Inc, who is completing his third consecutive term.

The Constitutional Amendment which appeared on the ballot was passed by a large margin.

Piedmont Section———

MILL MANAGEMENT AND PIEDMONT RESEARCH*

BASIL D BROWDER
Executive Vice President
Dan River Mills, Inc

IN recent years we have witnessed a truly remarkable growth in our nation's economy. It would be pleasant to report that this growth smiled with equal favor on each segment of our economy. This, as you know, is not the case. However measured—volume of sales, share of the consumer dollar, capital investment, number of employees, and so on—the textile industry has not kept pace with the growth of the economy as a whole, and in some respects actually has shrunk.

We continue to engage in relentless competition within the industry – company against company, fiber against fiber, finish against finish. Together we battle the inroads that other industries make in our markets.

There are some bright spots, however, and the brightest of them are the advances which have been made in the area you represent—textile chemistry. New and better dyes, new fibers and new fabrics, new chemicals for textile processing, new and better resins, and fabulous finishes which have changed the whole complexion of the textile market—these you have created. I hesitate to think about the condition in which the industry would find itself, had it not been for these developments. Yet I am sure you would be the first to concede that perfection is not within your grasp, that there is still much to be done.

What has all this to do with Piedmont Section research? Simply this: All of you, whatever your company affiliation, have your fortunes intertwined with those of the textile industry. No company in this industry—I don't care how large, progressive, financially strong, research-oriented—is capable, alone, of solving the industry's problems. This is true of the struggle to prevent imports from strangling us. This is true of the struggle against competition from other industries. This is true as well in your area which, in the end, is to supply the consumer with the best value for his money. At some level there must be cooperation between companies if we will pay heed to the lessons of the past. In your area of responsibility, Piedmont Section research—and this applies equally to the other sections of AATCC—is the logical vehicle for encouraging cooperation between companies, and for extending the research arm of your individual firms. Therefore, it merits the support of management.

If I am to impress you at all with this point, it is essential for me to make personal reference to my own company. I am sure you will grant me the privilege of citing Dan River's attitude toward, and experience with, Piedmont Section research as evidence that it does merit management's support.

I think it is fair to state that Dan River was one of the first of the fabric producers to undertake a research and development program on an organized basis. The investment in research has been well repaid. If you would examine our annual reports for the past ten or fifteen years, not just the figures, but the editorial comment, too, you would be impressed by the importance our management attaches to research and development. From the earliest days of our program, we have supported the participation of our research people in AATCC affairs.

Dan River has encouraged and backed its research personnel in their research activities. I might add that I checked this with what I would judge to be unbiased sources, and it was confirmed without question. Thus when we say Piedmont Section research merits management support, we can also say we practice what we preach. Why does Dan River provide this support? There are a number of reasons, but they can conveniently be narrowed down to two.

First, Piedmont Section meetings offer an excellent form for exchange of technical information and for keeping abreast of new developments. We take it to be true that chemists, physicists, engineers, and other research people, by the very nature of their responsibilities, are possessd of a vast inquisitiveness and a desire to search out what is happening in their fields, what are the latest development, what is new. We fail to see that this can be accomplished successfully if they are figuratively chained to their laboratories. If we are to keep them reasonably content and if we are to be considerate of them as employees and persons, we feel the way must be open for them occasionally to talk informally with others in their field, to explore common problems and to test ideas. This we owe them—the opportunity to broaden their knowledge, to profit by the experience of others, and to sharpen their own creative talents.

Moreover, we think that management has the right to expect that research people are always up-to-date and well informed on developments in their field. We expect them to read technical journals, to study research papers, and review the pertinent literature. But this is not enough. Occasionally we expect them to be in personal contact with others who will stimulate their thinking and perhaps plug some chinks in their knowledge. What better forum for this than the Piedmont Section research committees!

There is no need for me to tell you we live in an era distinguished by the rapidity at which changes take place. The frontiers of human knowledge are being pried open at a quickening pace. Management, from top to bottom, finds its job ever more technical, more complex, more demanding. Developing managers to contend with today's challenging business environment commands increasing attention, and is a principal concern of top executives. A university is hardly worthy of the name unless it provides a course in advanced management for businessmen. In view of this widespread and legitimate concern with management development, is it not logical that in the sciences, where change is most rapid of all, the people most intimately involved should be encouraged and supported to develop their knowledge and ability?

We will continue to back our research people who wish to make

(*concluded on page 23*)

* Presented September 26, 1959 before a meeting of the Piedmont Section's General Research Committee.

1959 National Convention———

TECHNIQUES FOR UNION DYEING BLENDS OF ZEFRAN AND COTTON WITH VAT DYES*

ROBERT L BURGESS

Textile Development
Textile Fibers Department
Dow Chemical Company
Williamsburg, Va

INTRODUCTION

THE dyeing versatility of Zefran[1] acrylic fiber is perhaps best demonstrated when one considers techniques for union dyeing it with cotton. Heightened consumer and trade interest in "minimum-care" fabrics having excellent fastness properties from all points of view make this a very timely topic, particularly when one considers the fact that it is both easy and economical to use vat dyes on blends of Zefran and cotton.

Package- and piece-dyeing procedures already well established for dyeing cotton with vat colors need only minor adjustments to realize true unions on blends of Zefran and cotton. The production of bright, clear, solid shades is readily possible in these blends using one bath procedures on conventional cotton dyeing equipment.

Perhaps the best way to indicate the similarity of the operation as well as to supply some necessary background for the union dyeing of blends of these fibers is to compare the dyeing characteristics of Zefran and cotton, when dyed individually with vat colors.

DISCUSSION

COMPARISON OF VAT DYEING CHARACTERISTICS———Vat dyestuffs on Zefran have equivalent color yields and colorfastness properties to cotton and are applied using conventional techniques.

The application of vat dyestuffs to Zefran is similar to cotton in many respects. For example:

1) The full spectrum of color is available.
2) Either pigment or reduced methods may be employed although the pigment is recommended where applicable.
3) Dyeing times are similar.
4) Additions of salt promote exhaustion in medium and heavy dyeings.

There are, however, several differences:

1) The classification of hot-, warm- and cold-dyeing vat colors for cotton does not apply to Zefran.
2) Excessive sodium hydroxide has less effect on the exhaustion of vat dyestuffs on Zefran than on cotton.
3) Light and medium shades are dyed on Zefran at low temperatures. Heavy shades on Zefran are dyed at higher temperatures (160° to 180°F) to obtain better exhaustion of the dyebath. Most vat dyes exhaust better on cotton at low temperatures.
4) Long bath ratios, low electrolyte concentrations, addition of leveling agents, and increased alkalinity have less effect on the exhaustion of vat dyestuffs on Zefran than on cotton.

The "wash-and-wear" properties of Zefran acrylic fiber are said to be fully utilized when dyed with vat colors which withstand repeated launderings, household bleaches, sun exposure, perspiration, and other destructive influences encountered in normal use.

Light, medium and heavy percentages of the most widely used vat prototypes have been dyed on Zefran and cotton at temperatures from 120° F to 180°F. The medium and heavy percentages of color dye union shades in the general temperature range of 140°F to 180°F.

The light percentages of dyes may require a retarding agent for the Zefran. The most effective retarding agent found to date is 2,2'-dihydroxy-5, 5' - dichlorodiphenylmethane. The amount of retarding agent necessary to obtain unions when dyeing a low percentage of vat color has been determined for a representative series of vat dyes selected from the hot-dyeing, warm-dyeing and cold-dyeing types.

Combinations of vat dyes that dye union shades on Zefran and cotton in the package machine and when using the pad-jig method are given.

PACKAGE DYEING BLENDS OF ZEFRAN AND COTTON———Unions on Zefran and cotton have been successfully package dyed using a variety of commercial methods available in order to fit smoothly into the routine of particular dyehouses. Details such as when and how to add the caustic and hydro depend on the dyer. The reduce "method" or the "pigment method" both have been successful.

Most of the vat dyeing on Zefran and cotton has been done using the "pigment method", where the dye is added to the machine cold and circulated before reducing. The dye is reduced by adding the caustic and sodium hydrosulfite at room temperature and heating the dyebath to dyeing temperature. Oxidation is normally accomplished in acidic medium.

UNION SHADES WITHOUT A RESERVING AGENT———A look at four typical and widely used vat colors make union dyeing more understandable. Over 40 prototypes were dyed on Zefran and cotton, varying temperature and dye concentration. The amount of dye was varied to produce light, medium and heavy shades. Temperatures were varied to cover the popular range of 120°, 150°, and 180°F, used in package-machine dyeing. Anthraquinone vat dyestuffs were applied in pigment form and reduced at the specified temperature with the minimum amount of caustic recommended for these dyestuffs. No electrolyte was added to aid exhaustion. Indigoid vat dyes were applied by the "reduce method" as recommended for dyeing cotton. The four colors shown represent the type of results normally obtained from the different classes of vat dyes.

CI Vat Green 3 represents the hot-

* Presented October 8, 1959 during AATCC's 1959 National Convention at Washington, DC.

[1] Registered trademark of the Dow Chemical Co.

dyeing class. (See Figure 1). Dyes in this group dye cotton readily. As expected, unions are obtained easily without the use of reserving agents, except in the lightest shades. With the most favorable conditions for the cotton (such as short bath ratios, and/or the addition of an electrolyte) unions can be obtained in light shades without a reserving agent.

CI Vat Brown 3 represents the warm-dyeing colors. (See Figure 2). This class of vat dyestuffs gives union shades readily but usually requires lower temperatures than colors from the hot-dyeing group. Short bath ratios and the addition of salt are helpful in medium-light shades. In very light shades, a reserving agent to retard the vat-dye strike and depth of shade of the Zefran is necessary to obtain unions.

The cold-dyeing vat dyestuff class is represented by CI Vat Red 35. (See Figure 3). As would be expected, salt, less alkali, shorter bath ratios and low temperatures are needed to build a shade on the cotton when using these colors. In package-machine dyeing, unions are obtained with these colors by using a reserving agent.

When dyeing union shades on Zefran and cotton with several dyes in the formula, best results are usually obtained by using colors from the same class. In a case where the cast is not the same on the Zefran as on the cotton, the formulation can be corrected by using a cold-dyeing vat to shade the Zefran. This same principle applies with hot-dyeing colors to shade the cotton.

CI Vat Orange 5 represents the indigoid vat dyes. (See Figure 4). The indigoid vat dyes were reduced before adding to the dyebath. Common salt was used to exhaust the color. When using this method for applying the dye, these colors generally dye unions similar to the warm-dyeing anthraquinone vats.

UNIONS WITH A RESERVING AGENT——Reserving agents referred to here are chemicals that retard the vat-dye strike and limit the depth of shade on Zefran. A number of substituted phenols have been found to reserve Zefran efficiently. One theory on the mechanism involved that explains considerable data and makes it possible to predict dyeing behavior is that the reserving agent is adsorbed on the fiber, creating a high negative surface potential barrier to the approach of dye anions.

The four dyes used to characterize

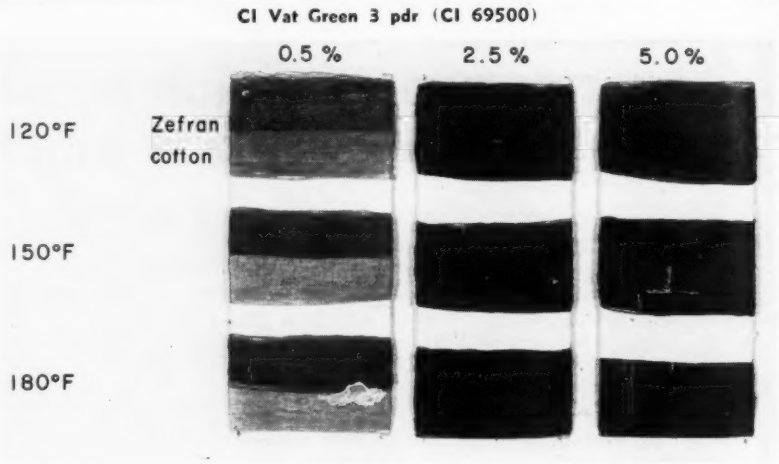


Figure 1
Typical results of union dyeing performed on Zefran and cotton by hot-dyeing class of vats using the pigment method in a bath ratio of 1:20

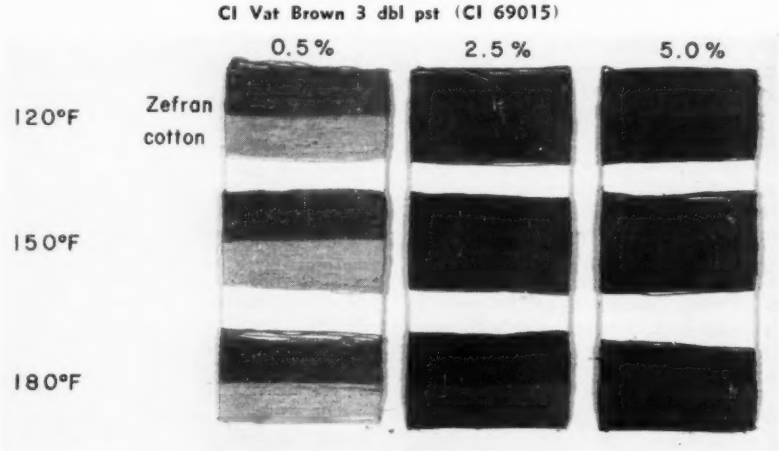


Figure 2
Typical results of union dyeing performed on Zefran and cotton by warm-dyeing class of vats using the pigment method in a bath ratio of 1:20

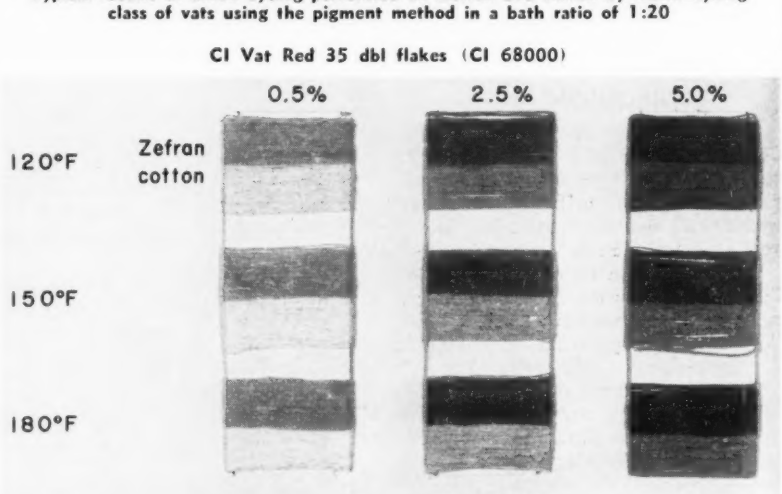


Figure 3
Typical results of union dyeing performed on Zefran and cotton by cold-dyeing class of vats using the pigment method in a bath ratio of 1:20

CI Vat Orange 5 pst (CI 73335)

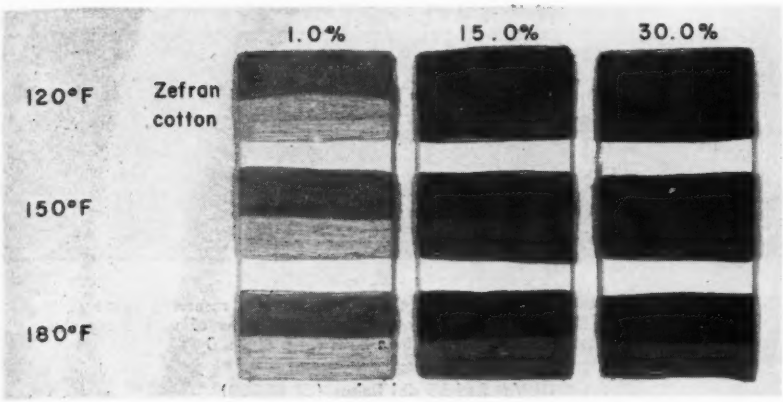


Figure 4
Typical results of union dyeing performed on Zefran and cotton by indigoid class of vats using the reduce method in a bath ratio of 1:20

CI Vat Green 3 pdr (CI 69500)
0.5% dye; 80% Zefran/20% cotton

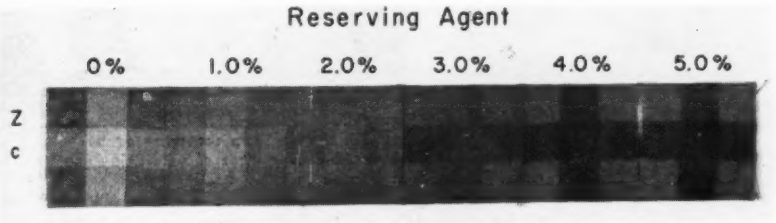


Figure 5
Typical results of union dyeing with the aid of a reserving agent performed on Zefran and cotton by hot-dyeing class of vats using the pigment method in a bath ratio of 1:20

the union dyeing of Zefran and cotton have been dyed in light shades using a reserving agent, 2,2′-dihydroxy-5, 5′-dichlorodiphenylmethane. The next four illustrations show how the depth of shade varies on the two fibers when using a varying amount of the reserving agent. (See Figures 5, 6, 7 and 8). These dyeings were made on a blend of 80% Zefran and 20% cotton in a 1:20 bath ratio. In dyeing with the anthraquinone vats, the bath was set with the amount of reserving agent specified and dye pigment was added at 70°F. One ounce per gallon of caustic and sodium hydrosulfite was added to reduce the dye, and the bath was heated to 120°F. Dyeing was carried out at 120°F for 15 minutes, oxidized with peroxide and acetic acid and soaped. In dyeing with the indigoid vats, the dyebath was set with the reserving agent and reduced dye was added.

The checked fabric containing squares of Zefran and cotton is mounted with a cotton square in the middle and a square of Zefran at each corner. As observed with all vat dyestuffs screened, the union in these cases shown is accomplished somewhere between zero and 5% reserving agent. These results correlate closely with results in the package machine. Typical vat formulations for union dyeing Zefran and cotton in the package machine can be found in Table I.

TABLE I

Vat formulations for union dyeing yarn of 80% Zefran and 20% cotton in a package machine

Peach

Scour:	2.0% anionic detergent	200° F	30 min
	1.0% TSPP		
Rinse			
Set bath:	1.0% Nekal NF (alkylarylsulfonate with organic solvent)		
	2.0% Marasperse N (sodium lignosulfonate)		
	5.0% Preventol GDC (2.2′-dihydroxy 5,5′ dichlorodiphenyl methane)		
		80° F	10 min
Add:	0.18% CI Vat Orange 2 pdr		
	0.065% CI Vat Brown 12 pst	80° F	20 min
Add:	0.5 oz/gal caustic		
	0.5 oz/gal hydro		
		80° F	
Heat to		120° F	over 30 min
Hold		120° F	15 min
Rinse			
Oxidize:	0.1 oz/gal peroxide (35%)	cold to 160° F	over 15 min
	0.1 oz/gal acetic acid (56%)	160° F	15 min
Rinse			
Soap:	1.0% anionic detergent	cold to 200° F	
		200° F	10 min
Rinse			

Following shades are dyed with the same procedure with specified variations in dyestuff, reserving agent, caustic and hydro, and dyeing temperature.

Light Tan

1.0% Preventol GDC
1.0% Vat Brown 3 dbl pst
1.4% Calcoloid Fast Yellow GL pst

Yellow

1.0% Preventol GDC
1.5% CI Vat Yellow 2 pdr

Aqua

5.0% Preventol GDC
0.2% Indanthrene Blue CGKWP pdr
0.1% CI Vat Green 1 ex conc pdr

Light Grey

2.0% Preventol GDC
0.43% CI Vat Black 25 pdr ex conc
0.23% CI Vat Violet 13 pst
0.053% Indanthrene Blue CGKWP pdr

Pink

3.0% Preventol GDC
0.75% CI Vat Red 44 pst

Blue

2.0% Preventol GDC
2.0% CI Vat Blue 14 dbl pst
0.05% CI Vat Green 1 ex conc pdr

Gold

No Preventol GDC
5.5% Calcofast Yellow GL pst
0.8% CI Vat Brown 3 dbl pst — 140° F — 30 min

Brown

No Preventol GDC
8.0% CI Vat Brown 12 pst
1.3% CI Vat Yellow 2 pst
0.2% CI Vat Black 27 pdr — 180° F — 45 min
0.7 oz/gal caustic and hydro

Navy

No Preventol GDC
3.0% CI Vat Blue 18 pdr
3.0% CI Vat Black 9 pst
0.7 oz/gal caustic and hydro — 180° F — 60 min

Green

No Preventol GDC
2.0% CI Vat Green 1 ex conc pdr
13.0% Calcoloid Fast Yellow GL pst
0.75 oz/gal caustic and hydro — 180° F — 60 min

Black

No Preventol GDC
20.0% CI Vat Black 9 pst
1.0% CI Vat Blue 18 pdr
1.0 oz/gal caustic and hydro — 200° F — 60 min

To summarize, blends of Zefran and cotton may be package dyed in a complete range of shades using techniques and equipment common to the cotton industry.

PIECE DYEING BLENDS OF ZEFRAN AND COTTON———Piece dyeing fabrics of Zefran and cotton either continuously or by pad jig offers an ideal method for achieving good unions.

In the pad-steam process, where the dye is immediately fixed on the fabric, the differences in dyeing characteristics of Zefran and cotton do not need to be considered.

In pad-jig dyeing, the ideal condition is also approached. But in this method, since the dye is not fixed immediately, it is necessary to bear in mind the same considerations that apply in package dyeing.

In order to obtain full advantage of the pad-jig method when dyeing the *light shades*, the following steps can be taken:

1) Pad the amount of dye necessery to obtain the shade and do not add dye to the jig, unless necessary for shading.
2) Keep the bath ratio as low as possible.
3) Set the jig with alkali and sodium hydrosulfite to reduce the dye using the minimum amount of alkali.
4) Set the jig bath with electrolyte (20 to 40 g/l common salt).
5) Dye at the minimum temperaerature necessary for good reduction of the dye.
6) Do not use a leveling agent.

CI Vat Brown 3 dbl pst (CI 69015)
0.5% dye; 80% Zefran/20% cotton

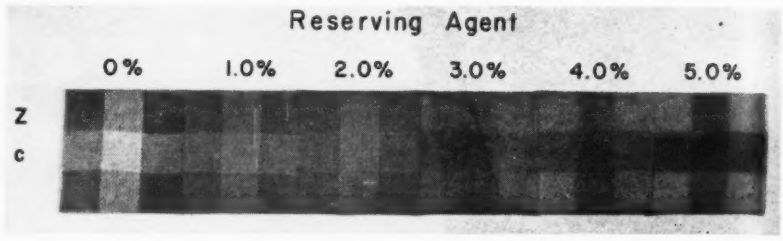


Figure 6
Typical results of union dyeing with the aid of a reserving agent performed on Zefran and cotton by warm-dyeing class of vats using the pigment method in a bath ratio of 1:20

CI Vat Red 35 dbl flakes (CI 68000)
0.5% dye; 80% Zefran/20% cotton

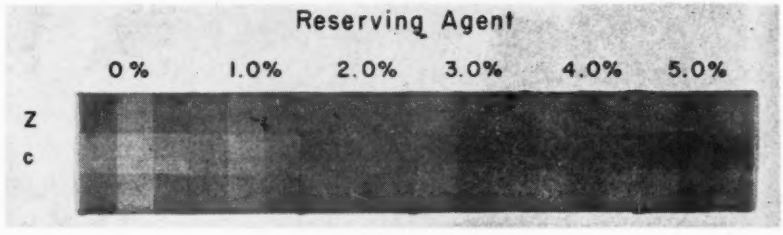


Figure 7
Typical results of union dyeing with the aid of a reserving agent performed on Zefran and cotton by cold-dyeing class of vats using the pigment method in a bath ratio of 1:20

The reserving agent can be padded along with the dyestuff and/or added to the jig.

Heavy and medium shades can be dyed to excellent unions on piece goods made from Zefran and cotton by the straight-jig or pad-jig method using temperature to control the union. When medium shades are padded, generally good unions are obtained by dyeing at 120°F to 140°F. Heavy shades are dyed at 160° to 130° F to obtain a better exhaustion on the Zefran.

The strike of vat dye is not so important when dyeing heavy union

TABLE II

Vat formulations for union dyeing fabric of 80% Zefran and 20% cotton using the pad-jig method

Sand

Pad	0.7 oz/gal CI Vat Black 25 pst 0.22 oz/gal CI Vat Brown 3 dbl pst 0.23 oz/gal Indanthrene Yellow PGA dbl pst 0.13 oz/gal Keltex (sodium alginate) 0.7 oz/gal Nekal NF (alkylarylsulfonate with organic solvent) 1.3 oz/gal Preventol GDC (2, 2'-dihydroxy 5,5'-dichlorodiphenylmethane)		
		160° F	
Set in jig	0.07 oz/gal Nekal NF	120° F	
	0.7 oz/gal flake caustic and hydro 5.0 oz/gal common salt		
Dye		120° F	15 min
Rinse			
Oxidize:	0.1 oz/gal peroxide (35%) 0.1 oz/gal acetic acid (56%)	160° F	15 min
Rinse			
Soap	0.3 oz/gal anionic detergent 0.07 oz/gal TSPP	180° F	10 min

Following shades are padded and dyed as above with specified variations in dyestuffs, reserving agent, salt concentrations in the jig and dyeing temperature.

Blue
1.6 oz/gal CI Vat Blue 14 dbl pst
0.13 oz/gal CI Vat Green 1 pst

Light Green
0.14 oz/gal CI Vat Green 1 ex conc pdr
0.4 oz/gal CI Vat Blue 14 dbl pst
0.65 oz/gal CI Vat Yellow 3 dbl pdr

Pink
1.3 oz/gal CI Vat Red 44 pst
0.22 oz/gal CI Vat Red 10 dbl pst
0.33 oz/gal Preventol GDC in the jig
Soap at boil.

Sandlewood
2.6 oz/gal CI Vat Brown 12 pst
1.3 oz/gal CI Vat Green 8 pdr
1.0 oz/gal Tinon Chlorine Brown BG dbl pst
No Preventol GDC in pad or jig.
No common salt in the jig.

Orange
6.5 oz/gal CI Vat Orange 7 dbl pst
1.0 oz/gal caustic and hydro
140°F
No Preventol GDC in pad or jig.
No common salt in the jig.
Add four points of pad liquor to 50 gallons of jig bath.

Taupe
1.7 oz/gal CI Vat Brown 12 pst
2.2 oz/gal CI Vat Green 8 pdr
3.6 oz/gal CI Vat Black 25 pst
1.0 oz/gal caustic and hydro
No Preventol GDC in pad or jig.
Add four pints of pad liquor to 50 gallons of jig bath. 140° F

Navy
13.0 oz/gal CI Vat Black 18 pst
5.2 oz/gal CI Vat Black 9 pst
2.6 oz/gal CI Vat Green 1 dbl pst
1.5 oz/gal caustic and hydro
180° F 45 min
No Preventol GDC in pad or jig.
No common salt in the jig.
Add four pints of pad liquor to 50 gallons of jig bath.

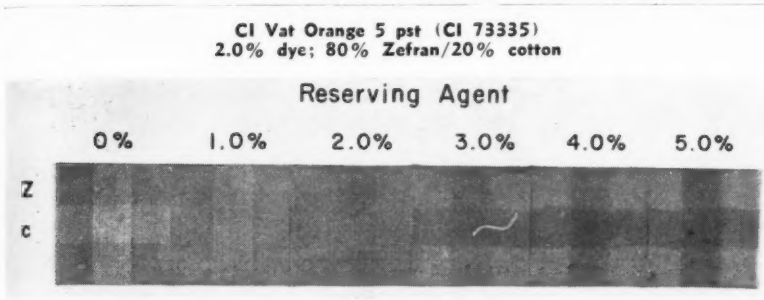


Figure 8
Typical results of union dyeing with the aid of a reserving agent performed on Zefran and cotton by indigoid class of vats using the reduce method in a bath ratio of 1:20

shades. In the case of light shades, if the dye goes first to the Zefran, the bath is exhausted and the cotton may only be stained. The dye may tend to go to the Zefran first in heavy shades; however, the dye remaining in the bath dyes the cotton. In a situation like this, the fact that exhaustion is increased on Zefran by raising the temperature of dyeing becomes more important than bath ratios and addition of electrolyte in obtaining unions.

Typical vat formulations for shades dyed on the jig on fabric of 80% Zefran and 20% cotton are given in Table II.

SUMMARY

Blends of Zefran and cotton can be package, jig, and continuously dyed with vat colors using one-step, one-bath procedures similar to 100% cotton.

It is thus pratical and economical to dye yarn or fabric made from a blend of Zefran and cotton in a wide range of popular bright, clear and solid shades with the well-known fastness of vat colors.

Mill Management———

(*concluded from page 18*)

Piedmont Section research a special opportunity for exchanging technical information and keeping abreast of new developments. We will continue to encourage them to take membership in this Association, to attend your meetings, and to accept assignment on your research projects. We will urge them to give some time to your research committees and to use our laboratory for this purpose. And we will provide reasonable financial assistance to defray travel expenses incurred at your gatherings.

Second, Piedmont Section research performs a valuable industry service by undertaking a study of those problems which, by their nature, cut across a large segment of the industry and affect a number of companies. I have heard there are such problems—namely, chlorine retention of resin-treated fabrics. I suggest another one --the problem of odor in resin-finished fabrics, a subject on which from time to time there have been some complaints within the industry.

Researching these broad industry problems gets back to the point I made earlier—that at some level individual companies within the industry must cooperate if such problems are to be solved. And this is certainly true if they are to be solved with dispatch, and with ultimate benefit to the industry at large, rather than a single company. I want to emphasize that cooperation in such a study need not and does not compromise any participating research people in their solemn obligation not to divulge confidential information about their own employer's activities. As you know, participants perform their segment of the overall project in their company laboratories, which has the additional advantage of enabling them to call upon the total brainpower of their associates.

It is my impression that the objective of most, possibly all, projects undertaken by Piedmont Section Research Committees is to find causes, to establish why certain chemical reactions or mechanical effects take place. Stated another way, it appears to me you start with a known fact, always a troublesome one, and attempt, by cooperative effort, to define the phenomena that result in the fact. Once the causes are known and understood—say, for example, the Chlorine Retention Committee is able to delineate the exact processes and reactions that make chlorine retention a problem in resin-treated fabrics—individual company research organizations can work more intelligently to find the cures. The cures, if particular companies find them, will not become industry property, at least not if it can be avoided. Still it must be clear that a real service has been rendered to the industry by Piedmont Section research in having made known the facts that become the basis for still another step forward in textile chemistry.

This is not just conversation. These research projects have helped us. You will recall that the Piedmont Section research committee prepared two papers dealing with the effect of resin finishes on the lightfastness of vat dyes. Both papers were Intersectional Contest winners, by the way. The information resulting from this research project was very helpful to us in developing improved resins, and in avoiding certain troublesome resin and dye combinations.

Just one more example. Another Piedmont Section research project concerned the problem of tear strength in resin-treated textiles. One finding of this study indicated that the proper use of softeners had the effect of increasing tear strength. This was helpful to us in developing improved softeners in our own laboratories.

In concluding, let me point out briefly what I think management should do about Piedmont Section research.

First, management should develop an intelligent interest in what you are doing. Management should not only keep reasonably well-informed on what's going on, but as with any project they support, should occasionally ask questions such as "Are we getting enough out of it?" and "How can we make it more effective?" I believe it might spur you on if management would from time to time challenge what you are doing.

Second, management should encourage research and technical people to participate, and should make sure they have adequate time and the use of company facilities. Management support only becomes meaningful if words are backed up with positive deeds.

Finally, and here is a point where I suspect many of us fall down, management should let research and technical people know that the time they give to Piedmont Section research is appreciated as a contribution to the company's well-being and is definitely not viewed as time stolen or wasted from their primary responsibilities.

1959 National Convention———
Symposium on "New Dyeing and Finishing Processes"

PRESENT-DAY TRENDS IN BLEACHING*

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This paper discusses the preparation and bleaching of fabrics which are today commanding the most attention.

First in this category are blends of cotton and the acrylic, polyester, and triacetate fibers respectively. Batch procedures which can be adapted to today's equipment are suggested.

A review of current practices in the preparation and bleaching of 100% cotton fabrics reveals some interesting advances recently made in these procedures, particularly in the handling of the heavier fabrics, such as drills, twills, satins, etc, in open width. Why large yardages of these fabrics are still handled in batch form and the possibilities for greater use of continuous methods for processing these fabrics is discussed.

Several highly interesting developments not yet publicized are described.

INTRODUCTION

IT is particularly fitting that, in discussing "New Dyeing and Finishing Processes", we should include the bleaching operation. The importance of bleaching is generally recognized, but little talked about when other finishing processes are discussed. Yet it is the starting point for practically all finishing processes. A poor job done here leaves its effect on every one of the subsequent operations.

In this paper the use of the term "bleaching" will, in most instances, imply the entire preparation operation consisting of size removal, scouring, bleaching, or any combination of these. In keeping with the general theme of this symposium, I will limit my discussion to the bleaching of fabrics. Moreover, emphasis will be directed primarily to the fabrics which today seem to command the most interest. These are 100% cotton and the blends of cotton and the acrylic, polyester, and triacetate fibers respectively.

BLEACHING COTTON BLENDS

Textile engineers and designers have, in the last few years, recognized the advantages of wedding the wonderful characteristics placed in cotton by nature with the man-made characteristics of the synthetic fibers. By so doing, they come closest to the dreamed-of perfect fabric. The growing popularity of these blends is clearly evident on the street, in the stores, and of course, in the finishing plants. So it is important that we look at the procedures for bleaching these blends.

For this work we have chosen one or two blends of cotton and each of several types of the previously named fibers. We first carried out bleaches under conditions suited for jig bleaching. Then we investigated possible continuous-bleaching procedures. I will describe to you the several procedures for each blend which have given the best results and are useable in today's equipment under present-day conditions.

With each procedure I will show the reflectance reading, the strength, and in the case of Arnel-cotton I will show the result of a dye test for saponification.

The reflectance reading is an average of six readings made on a Gardner Multipurpose Reflectometer using the blue filter.

The percent figure noted under the strength heading (strg), is the percent of the greige strength. For this work, where we were interested only in the relative strengths resulting from various treatments, we relied on the bursting strength as determined with a Mullen Tester. These figures are the average of four breaks and are given as percent of original strength.

The saponification test on the Arnel-cotton material was made by dyeing the cloth with 2% owf CI Direct Blue 8 (CI 34200). A liquor ratio of 1:20 was used at 190°F. A negative (neg) designation means that the Arnel fiber was unstained. A slight (sl) designation means a faint stain. This degree of saponification would probably not interfere with cross dyeing, but is not suitable for white effects. A "mild" designation means a light stain which probably could not be used for cross dyeing, but is perfectly good for all whites.

The percentage figures given in the jig bleach formulations are percent solution. The percentages in the continuous bleaching formulas are based on the greige weight of the cloth.

ARNEL-COTTON———Arnel is a triacetate fiber manufactured by the Celanese Corp of America. This fiber is susceptable to saponification by alkali, but is not as sensitive as acetate rayon. Nevertheless, we found it was necessary to use very mild alkali or even bleach from acid solutions to avoid saponification.

Because of an identification tint on one of the fibers, we first gave the cloth to be jig bleached a very light scour with sodium tripolyphosphate and a nonionic detergent.

Table I presents the bleach procedures which give the best results on Arnel-cotton.

I have purposely shown all of these procedures to illustrate the various factors that must be considered when deciding on a procedure for your plant. In jig bleaching, excellent results are obtained with sodium chlorite, but you may not wish to risk corrosion of your ventilation system may not be adequate. Equal results can be obtained by using hydrogen peroxide, but some saponification may result. This may not be serious for you. The mildly alkaline peroxide solution gives you a white nearly up to the first two with no saponification. A lower-cost formula gives a white quite adequate for dyeing and with no saponification.

In continuous bleaching we find a similar situation. In addition, we find that a single bleach gives results equal to a double-bleach method.

ACRILAN-COTTON AND ZEFRAN-COTTON (50/50)———Acrilan is manufactured by the Chem-

* Presented October 9, 1959 at Washington, DC, during AATCC's 38th National Convention as part of a symposium on "New Dyeing and Finishing Processes".

TABLE I

Bleach procedures which gave the best results on Arnel-cotton blends

JIG

	Reflectance (%)	Strg (%)	Sap
Greige	69.5	100	——
#1			
0.4% sodium chlorite			
0.25% nitric acid			
0.2% TSPP			
One hour at 200°F	87.7	97	neg
#2			
1.75% H_2O_2 35%			
0.90% NaOH			
0.1% nonionic detergent			
One hour at 180°F	87.9	97	mild
#3			
1.75% H_2O_2 35%			
1.5% TSPP			
0.10% EDTA			
One hour at 180°F	86.5	97	neg
#4			
0.5% H_2O_2 35%			
0.3% disodium phosphate			
0.1% borax			
0.1% NaOH			
One hour at 200°F	84.7	97	neg
CONTINUOUS			
#1			
Enzyme desize			
Wash			
Bleach			
2% H_2O_2 35%			
1.5% disodium phosphate			
0.4% borax			
0.13% caustic soda			
(See Ref 1)			
Steam 1.25 hrs			
Wash	86.1	98	neg
#2			
Enzyme desize			
Wash			
Bleach			
2.0% H_2O_2 35%			
2.0% sodium silicate			
0.3% caustic soda			
Steam 1.25 hrs			
Wash	87.3	98	mild
#3			
Enzyme desize			
Wash			
Bleach			
0.7% H_2O_2 35%			
1.5% disodium phosphate			
0.4% borax			
Steam one hour			
Wash			
Bleach			
1.0% H_2O_2 35%			
1.5% disodium phosphate			
0.4% borax			
Steam one hour			
Wash	86	98	neg

TABLE II

Bleach procedures which gave the best results on Acrilan-cotton and Zefran-cotton blends

JIG

	Reflectance (%)	Strg (%)
Greige	62.1	100
#1		
0.25% H_2SO_4		
Run two ends at 100°F		
Add		
1.5% peracetic acid 40%		
0.1% hexametaphosphate		
1.5 hours at 200°F	77.8	90
#2		
0.4% sodium chlorite		
0.2% formic acid		
1.5 hours at 200°F	75.2	93
#3		
0.25% H_2SO_4		
Run two ends at 100°F		
Add		
1% peracetic acid 40%		
0.1% hexametaphosphate		
1.5 hours at 200°F	74.9	90
CONTINUOUS		
#1		
Desize		
Wash		
Bleach		
3% H_2O_2 35%		
1.5% disodium phosphate		
0.4% borax		
Steam 1.25 hours		
Wash	72.5	98
#2		
Desize		
Wash		
0.75% sulfuric acid		
Lay 0.5 hour		
Wash		
Bleach		
3% H_2O_2 35%		
1.5% disodium phosphate		
0.4% borax		
Steam 1.25 hours		
Wash	72.6	96

strand Corp and Zefran by Dow Chemical Co. These blends are handled together because both behave similarly and both have been found to create a similar problem in bleaching, particularly for continuous bleaching.

Experimental bleaches were first run on the 100% synthetic fibers and they showed a definite trend for the fiber to yellow when bleached with an inorganic peroxygen product. Apparently, this effect is also present in cotton blends, but is much less noticeable. A spectrographic analysis of both fibers revealed the presence of titanium sulfate. As you know, titanium sulfate is frequently used for a colorimetric qualitative test for hydrogen peroxide. The two chemicals together form a yellow-to-orange color. We believe we get the same reaction and color on these fibers when we bleach with inorganic peroxygen products. Therefore, we have turned to other types of bleaching agents for jig bleaching. Continuous bleaching presents a real problem because, to the best of our knowledge, none of the continuous bleaching ranges in the United States are constructed in a manner to permit the use of sodium chlorite. Therefore, we have used mildly alkaline hydrogen peroxide solutions and obtained results satisfactory for a dye preparation, but not good enough for full whites. This problem is not common for all acrylic fibers, but all acrylics are difficult to bleach.

All cloth bleached in a jig was first given a mild scour or wet out to loosen the identification tint.

Table II presents the procedures which gave the best results.

Judging from the results obtained in the jig-bleaching experiments, we thought an acid treatment should be used in the continuous bleaching procedure. However, the results shown

TABLE III

Bleach procedures which gave the best results on Dacron-cotton (65/35)

JIG

	Reflectance (%)	*Strg (%)*
Greige	79	100
#1		
0.7% H_2O_2 35%		
0.3% sodium silicate		
0.1% caustic soda		
1.5 hours at 200°F	86.1	92
#2		
0.5% H_2O_2 35%		
0.3% sodium silicate		
0.1% caustic soda		
1.5 hours at 200°F	85.0	93
CONTINUOUS		
#1		
Quench with		
1.0% caustic soda		
0.5% STPP		
0.2% nonionic detergent		
140°F		
Lay four hours		
Wash		
Bleach		
3.0% H_2O_2 35%		
2.0% sodium silicate		
0.3% caustic soda		
Steam 1.25 hours		
Wash	86.7	92
#2		
Quench same as #1		
Lay four hours		
Wash		
Bleach		
1.0% H_2O_2 35%		
1.0% sodium silicate		
0.1% caustic soda		
Steam one hour		
Wash		
Bleach		
1.2% H_2O_2 35%		
1.0% sodium silicate		
0.1% caustic soda		
Steam one hour		
Wash	85.9	92

TABLE IV

Typical bleach procedures for Kodel-cotton

JIG

	Reflectance (%)	*Strg (%)*
Greige	52.7	100
#1		
0.7% H_2O_2 35%		
0.3% sodium silicate		
0.2% caustic soda		
One hour at 200°F		
Wash	81.8	99
CONTINUOUS		
#1		
Quench		
0.52% caustic soda		
0.5% STPP		
0.2% nonionic detergent		
Lay four hours		
Wash		
Bleach		
3.0% H_2O_2 35%		
1.5% sodium silicate		
0.4% caustic soda		
Steam 1.25 hours		
Wash	84.1	97

in Table II do not show any advantage gained by an acid treatment.

DACRON-COTTON (65/35)——Dacron is the polyester fiber manufactured by E I duPont de Nemours & Co, Inc. The polyester fibers are somewhat sensitive to alkali and, therefore, strong alkaline solutions used at elevated temperatures are avoided.

All cloth bleached in a jig was first given a light scour.

Table III presents procedure which gave the best results.

KODEL-COTTON——Kodel is the polyester fiber manufactured by Eastman Chemical Products, Inc. This fiber behaves quite similar to the other polyester fiber, Dacron. However, this particular greige cloth had a much lower reflectance, so it was decided to list one bleach for each procedure to give you an idea as to how much can be accomplished. (See Table IV).

In closing the discussion on blends, I want to repeat that the blends of cotton and these types of synthetics were chosen because it is believed that for the present and the immediate future they represent the largest items from a production viewpoint. Needless to say, the fabric designers will be planning many different blends, including some that are sure to create headaches for the finisher. It has been our experience that, when a new blend is presented, first consideration must be given to the fiber most likely to be affected by the bleaching chemicals and procedures. If the bleach results are not satisfactory, changes are made in small steps, slowly approaching a stronger bleaching procedure. In this manner it is possible to keep accurate track for future use of the changes being made and the affect on the fibers.

BLEACHING COTTON FABRICS

Now we turn to 100% cotton fabrics, still the leader by far in yards produced. Major emphasis will be directed towards open-width bleaching, both continuous and batch procedures. However, a few comments on rope bleaching are certainly in order.

ROPE BLEACHING——From a strictly scientific viewpoint, there have been very few new developments in cotton bleaching within the last two or three years. To be sure, new continuous-bleaching procedures have been proposed, but most of them were planned by drawing from older procedures used in kier or dye-beck bleaching and fitting the ideas into existing continuous procedures. Most certainly, some of these have filled a purpose and are being used to a limited extent. However, the largest yardage of cotton is still bleached by means of conventional, multistage bleaching ranges. Basically they consist of desize, caustic scour, and bleach operations. Some mills find it advantageous to use an acid treatment as a supplementary step or even to replace the desize with an acid treatment.

Modified single-stage procedures are being used in four or five well-known bleacheries. I use the term "modified" because they use a small, steam J box for an alkaline preparation step of 20 to 30 minutes ahead of the bleach operation.

About four years ago a silicate-free bleach procedure was announced

(1,2). Many mills looked at this procedure, but turned it down only because it was more expensive chemically than the conventional procedure using sodium silicate in the solution. Some of these mills have taken a second "look-see" at this procedure and have concluded that chemical costs should not necessarily be considered the major deciding factor when choosing a bleach procedure. Consequently, several mills have lately taken up this procedure and use it whenever they run cloth which will be dyed. They report practically no reruns or rejects in the dyehouse due to bleach faults, slightly better color value, and much to their surprise, they find the silicate-free solution is easier to control in the saturator.

We find an increase in double-strand operation. This permits a mill to produce 400 yards per minute when the equipment is running at the rate of 200 yards per minute. The key to successful operation of double strand lies in the proper set up of the equipment for handling and supplying the greige cloth to the double singer.

Our comments on batch bleaching in the rope are confined to kier bleaching. Kier bleaching has always been carried out at about 185°F with the kier open. Years ago some experiments were run in a mill at bleaching in a closed kier under pressure and at temperatures above 212° F. This idea was dropped when it was feared the pressure build up due to temperature and possible evolution of oxygen might exceed the safety limit of the kier. Most kiers are constructed to stand 30 psi.

Interest in bleaching under pressure in kiers has been renewed. Perhaps this was brought about by the successful bleaching under pressure in package and beam machines. It is believed that bleaching in a kier under pressure is feasible, but certain precautions must certainly be observed. For example, the temperature should not exceed 212° to 215°F. This will permit a fair reduction in bleaching time. Proper pressure-release mechanism along with adequate pressure gauges must be in good working order. We know of one mill which is bleaching in a closed kier with temperature at 210° to 212° F. They have reduced the bleach time by about one-third. Moreover, they find that, with the kier under slight pressure (six to eight psi), they are no longer troubled with poor circulation.

Now let us turn to open-width bleaching.

OPEN-WIDTH BLEACHING—— There has been considerable activity in the last few years towards streamlining and improving the procedures for the preparation of cloth for dyeing. Of course, medium- and light-weight cloth which is to be dyed has been prepared successfully for years in rope form through J box continuous bleaching ranges or in kiers. However, heavier cloth, such as drills, twills, sateens, etc, should be kept in the open width to avoid crease marks, better known as rope marks, in which the face of the fabric has been broken and which show up quite prominently after dyeing. To this category we must now add certain broadcloth constructions and other cotton fabrics which will be finished with a resin for "wash-and-wear" use. I think we are all aware that, with high-count fabrics, the faintest wrinkle mark shows up very prominently after resin treatment. Some people rely on white mercerizing in an effort to overcome this condition. Others are of the opinion that an open-width processing method, whereby the cloth remains relaxed or under only light tension with no chance for creases being formed by pressure or its own weight, is the best answer.

Thus, the need for bleaching in the open width is growing. When demands for lighter-weight cloth leaped ahead, the finishers quickly turned to rope J box, continuous bleaching ranges. However, those concerned with the open-width processing of fabrics have not done this for one reason or another and have shown a definite tendency to stay away from continuous methods. Perhaps this review of the present status of open-width continuous bleaching will stimulate new thinking on the subject.

Continuous open-width ranges built around either conveyor steamers or open-width J boxes are relatively few. The conveyor steamers produce excellent results, but are space consuming and expensive. Open-width J boxes, although smaller and less expensive than conveyors, are not widely accepted because fold marks and rubs do occur and tend to plague the finisher from time to time. An open-width steamer designed on the principal of the time wheel, which was popular years ago, was announced several years ago by Cook Machine Co. I do not know of any in use, but it would seem to have promise. Here the cloth and all moving parts rotate as one. The unit weight on the cloth at any one time is relatively little.

Several European manufacturers, notably Benteler and Dungler, have developed continuous, open-width equipment which is being used for preparation and bleaching. Benteler has devised a unique system of two beams inside a steamer so arranged that they simultaneously take on and deliver the cloth. The Dungler machine uses a patented spray system to impinge high-velocity superheated steam on the cloth as it enters a housing. The heated cloth then has a lay period of around 10 minutes as it passes through a scray within the housing where the temperature is about 115°C. Both are said to be operating well at several European mills.

Whether the Monforts Reactor or similar machines, such as the Shirley Flash Ager, can be adapted to bleaching must yet be determined.

All of us have been waiting for a machine which would permit us to continuously prepare and bleach cloth at elevated pressures and the related temperatures. Although actual production would not be increased, the high rate of bleaching attained under these conditions would enable us to bleach in a short time and thus have relatively fewer yards of cloth in the machine. Therefore, the machine would be less space consuming. But most important, the cloth would not only be kept in the open width, but it could be kept taut and completely free of any wrinkles.

Such a machine may soon be a reality. The James Hunter Machine Company has produced and patented workable seals which will be placed at each end of a pressure chamber. These will enable us to pass cloth continuously through the pressure chamber. The first laboratory model of this machine was ordered by the Becco Chemical Division and will be set up in our laboratory. We are eagerly awaiting the machine because we feel it will open an entirely new vista in the field of cloth preparation and finishing. I'm sure that many of you in other finishing fields are thinking right now how you could use this machine.

The procedures used for open-width, continuous ranges in the United States are thus far pretty much standard. That is, desize, caustic steam, and peroxide steam bleach.

Now that we have talked briefly about open-width equipment for con-

TABLE V

Routings	#1	#2
Reflectance	85.5%	86.1%
Fluidity	2.1	2.5
Absorbency—warp	48/16 in	40/16 in
fill	50/16 in	40/16 in
Water extractable	1.08%	0.40%
Fats, oils, waxes	0.13%	0.24%
Enzyme extractable	0.14%	0.19%
Ash	0.12%	0.06%

tinuous bleaching, let us look at the open-width batch procedures in use today.

These procedures have involved many different sequences. One routing which uses progressive jigs for the boil-off followed by a peroxide cold bleach step became quite popular. A study of this procedure made it evident that rearrangement of the various steps would enable us to obtain more efficient use of the cold bleach step and also shorten the total processing time. This was tried and has worked out very well. Below is a comparison of the two routings.

#1
Singe
Quench with enzyme
Lay about four hours
Boil-off
Wash
Saturate with cold bleach
Lay two to four hours
Mercerize
Wash

#2
Singe
Quench with cold bleach
Lay about four hours or longer
Boil-off
Wash*
Mercerize
Wash

*Optional

The second routing saves two and possibly three steps as well as combining the cold bleach and desize into one operation. Table V shows a comparison of the cloth analysis of material bleached by the two procedures. This was a 2.10-yard, 124 × 64 sateen. The same chemical concentration was used for both runs.

I believe you are familiar with these tests with the possible exception of the absorbency test. Here we take strips 0.5-inch wide and about eight inches long. Each end of the strip is impaled on a pin in a frame. One end is immersed in about 1.5 inches of distilled water. After five minutes, the height of the water absorbed by the strip is measured and reported in 16ths of an inch. 28/16 is considered by some as passable for vat dyeing in a continuous range.

Although the second procedure reduced the number of operations, you see there was little effect on the essential properties of the cloth. The reflectance of both samples is higher than normally needed for dyeing. The absorbency of the cloth run according to #2 procedure is slightly lower, but it is still excellent. Moreover, both lots were dyed in a continuous dye range using the same dye concentration and no differences could be detected.

I might add that here is a good example of the correlation between absorbency and percent fats, oils, and waxes, which some think may replace the idea of relating absorbency to the enzyme-extractable figure.

Another routing which has grown out of this last is as follows:

Singe
Quench with peroxide cold bleach solution
Pass through dye steamer
Batch and lay two hours
Boil-off on progressive jigs
Mercerize
Wash

This procedure is in use every day and we understand excellent dye results are obtained.

Cloth prepared by either one of the last two procedures has shown a noticeable improvement in the sheen of the mercerized cloth. Moreover, Barium Number determinations have indicated a slightly higher degree of mercerization.

The cold bleach solution used for both procedures has the following makeup:

0.2% anionic or nonionic detergent
1.0 to 1.5% sodium silicate
0.7 to 0.8% caustic soda (100%)
2 to 3% H_2O_2 35%

These are the percentages of chemicals we would like on the cloth. The pick up of the greige cloth will usually run around 70 to 75% at the most. Therefore, your solution make up must be adjusted accordingly.

One of the routings previously mentioned made use of a dye steamer for heating the cloth. I did not mention the dye steamer when discussing open-width equipment, but at this time I will give you two illustrations of how one was used for open-width bleaching.

In the first instance a two-yard twill was desized, boiled off with a caustic soda solution, and then washed. The twill was then saturated with the following peroxide solution:

3.5% caustic soda (100%)
1.0% sodium silicate
0.1% nonionic detergent
4.0% H_2O_2 35%

Notice the relatively high caustic soda concentration. This is typical for short time bleaches. The pickup of this solution was about 80%. The saturated cloth was passed through a dye steamer in 90 seconds and then given four very hot washes.

Mote removal was complete. The following analysis shows that the cloth was well prepared for dyeing.

Reflectance	77.3%
Fluidity	5.3
Absorbency	
Warp	29/16
Filling	28/16
Water extractable	0.29%
Enzyme extractable	0.23%
Fats, oils, waxes	0.27%
Ash	0.21%

The second case used a light-weight fabric containing checks of naphthol red-dyed yarns alternated with white yarns. This cloth was enzyme desized by steaming in a print ager which has been converted for this use. Then it was washed, mercerized, and washed. The cloth was then saturated with the following solution:

1.0% caustic soda (100%)
0.5% sodium silicate
0.1% nonionic detergent
2.1% H_2O_2 35%

The cloth passed through a steamer in 75 seconds and was then washed. The red was brightened without any bleeding, mote removal was complete and the white yarns were bleached to an excellent white.

I believe more work on the routings would bring further improvement. If the mercerizing step could be omitted or moved to the end of the routing, you would have a continuous bleach operation requiring at most three minutes.

The small plant that handles heavier fabrics, but does not have enough production to warrant a set of progressive jigs might give thought to a pressure jig. Like in a pressure kier, the caustic liquor in the vessel holding the two jig beams is heated to create a pressure of around 15 psi at the related temperature. About thirty minutes at this presure is sufficient for a good boil-off on the jig. Total time for one 36″ roll would be a little over one hour.

The Svetema Pad-Roll Machine has been successfully used in Europe for bleaching. As far as we know, all the installations in the United States are being used for dyeing. However, there would seem to be no question but that this equipment could be very nicely adapted for open-width, batch bleaching.

Another batch procedure which was developed within the last years might be of interest to some of you. For want of a better name we call it "dry can bleaching." Patent applications for this process have been filed.

The sequence is as follows:

Singe—quench with desize solution
Lay about four hours
Boil-off on progressive jigs
Wash
Saturate in last wash compartment with nonsilicate peroxide solution
Immediately pass over dry can-batch and stand about one hour
Mercerize
Wash

This procedure would work out well wherever dry mercerizing is used. Because of the drying action on the cans, a low pH, nonsilicate formulation is used. One word of caution must be noted. During our first mill trial, fluidity values tended to run around 11. Now in most cases a fluidity value above 10 is looked upon with suspicion. However, in this mill trial no abnormal change could be detected in the strength of the cloth processed in this manner. Moreover, additional laboratory work indicated that, by reducing the steam pressure in the cans to less than 15 psi, we would keep the fluidity value below 10.

For the final topic on the subject of batch bleaching cotton fabrics we have a new development to bring to to your attention. The old, peroxide cold bleach procedure patented by Becco in 1938 has seen long, useful service and is still widely used. It is a procedure requiring the simplest equipment and a minimum of labor. As most of you know, the greige cloth is saturated with an alkaline peroxide solution at room temperature either by means of a padder or on a jig. The saturated cloth is allowed to lay six hours or longer and is then given a scour and rinsed. Several variations of this procedure have been used successfully, notably those procedures previously described. Moreover, in addition to cottons, it has been used for rayon, wool, and many blends, both woven or knit goods. The results are fairly good to excellent whites depending upon the peroxide concentration, complete mote removal, and fair to only moderately good absorbency of the cold bleached cloth.

We have found that if one adds to the regular alkaline cold bleach solution about 0.5 percent of potassium, ammonium or sodium persulfate and then proceeds in the usual fashion, a well-bleached cloth showing a very pronounced improvement in absorbency is obtained. In the next illustration I will show, we used a 1.85-yard drill. One sample was saturated with solution #1 and the second with solution #2.

	Per 100 Gallons	
	#1 (lbs)	*#2* (lbs)
Sodium silicate	30	30
Caustic soda	10	10
Detergent	1	1
H_2O_2 35%	30	28
Potassium persulfate	0	4.25

The higher peroxide content of #1 formulation compensates for the active oxygen content of the persulfate in #2 so both solutions were equivalent with regard to active oxygen concentration.

Both samples were allowed to lay overnight and then were given two washes at 190°F, followed by a warm rinse.

Complete tests run on these samples are shown in Table VI and represent typical results obtained on a number of samples bleached in this manner.

In this work we used the drop method for the determination of the absorbency. The cloth is held tight and a drop of distilled water is placed on the cloth from a height of 3/8 of an inch. The time from the drop reaching the cloth until the specular reflectance disappears due to absorption is measured in seconds as an indication of the absorbency of the cloth.

In this cloth analysis note the marked improvement in absorbency. Also note the similarity of the other properties. When we first found the improvement in absorbency due to the use of a persulfate, we assumed it was a case of improving the size removal because persulfates have been used for years to convert starch. However, these analyses do not show this nor do we see any drastic change in fats, oils, or waxes. Another set of samples was saturated in solutions of the same make up. However, this set was given a lay period of only six hours and then washed and rinsed in the same fashion as the first set. The cloth bleached without the aid of a persulfate attained a reflectance of 80% and an absorbency of over three minutes. The cloth bleached with the solution containing a persulfate attained a reflectance of 83% with an absorbency of 20 seconds, a notable improvement.

TABLE VI

Solution	*#1*	*#2*
Reflectance	81.6%	83.0%
Absorbency	60 seconds	2.5 seconds
Fluidity	4.7	4.8
Water extractable	0.48%	0.48%
Enzyme extractable	0.69%	0.61%
Fats, oils, waxes	0.26%	0.28%
Ash	0.19%	0.21%

We believe this is an important development for the bleaching industry and might very well be extended to procedures other than the cold bleach. Work is still continuing in this direction. As for the cold bleach procedure, we believe these findings may further increase its use for small lots of specialty fabrics as well as for the small finisher of heavier fabrics, such as book binding, shoe lining, fabric for work clothes, and the like. A patent application has been filed.

CONCLUSION

This paper has reviewed the present-day procedures and the latest developments in the art of bleaching cloth. Major emphasis was given to procedures for bleaching blends of synthetics and cotton as well as the bleaching of 100% cotton. In the discussion on cotton bleaching, special attention was directed towards bleaching in the open width where we feel there is a definite need for further advancement in continuous open-width equipment and procedures. New-type pressure equipment, which may soon be ready for laboratory testing, could provide the answer to this need. For open-width bleaching in batches, a new development was described which yields much improved absorbency in cloth bleached by the well-known cold bleach procedure.

ACKNOWLEDGMENT

The writer wishes to acknowledge with appreciation the assistance provided by the members of the FMC Inorganic Research and Development Department and members of the Becco Chemical Division Sales Department in the preparation of this paper.

The following registered trade names were used in this paper:

Acrilan—Chemstrand Corporation
Arnel—Celanese Corporation of America
Dacron—E I duPont de Nemours & Co, Inc
Kodel—Eastman Chemical Products, Inc
Zefran—Dow Chemical Corporation

REFERENCES

(1) U S Patents 2,740,689 and 2,820,690
(2) *Am Dyestuff Reptr* 44, P745-8(1955)

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A list of papers which will be published in future issues of the Proceedings will be published in the December 14 issue

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Kenilworth, NJ

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Victor Dye Works Inc
Philadelphia, Pa

ACTIVITIES OF THE LOCAL SECTIONS

Mid-West

THE FALL MEETING of the Mid-West Section was held at the Bismarck Hotel, Chicago, Ill, on November 7, 1959, with 76 members and guests in attendance.

Speaker at the afternoon technical session was Fernand Schlaeppi, Ciba Co Inc, who spoke on "Cibacron Reactive Dyes, Their Properties and Fields of Application—A Discussion Based on Practical Experience".

John L Eich, chairman of the Nominating Committee, placed in nomination the following slate of officers, who were elected for 1960:

Chairman—J L McGowan, Morgan Dyeing & Bleaching Co

Vice chairman — Frank Stover, Koppers Co, Inc

Secretary—James E Miller, The Best Foods, Inc

Treasurer — Arthur J Andrews, Keystone Aniline & Chemical Co

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Sectional Committeemen—E M Eddington, Dow Corning Corp; Paul D'Amour, Phoenix Dye Works; Kenneth J Giese, Chippewa Falls Woolen Mill Co; Chalmer E Worley, The Orr Felt & Blanket Co.

Prior to dinner, the members and guests were invited to attend a reception at the joint invitation of suppliers in the Mid-West area.

Following dinner, Weldon G Helmus, AATCC president, addressed the Section and participated in the special program honoring past chairmen.

AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES
Jan 21-22 (Hotel Sheraton-Atlantic, New York, NY); Jan 21—Council Committees and Research Committees; Jan 22 (AM)—ECR, TCR; Jan 22 (PM)—Council

NATIONAL CONVENTIONS
Oct 6-8, 1960 (Sheraton Hotel, Philadelphia, Pa); Sept 28-30, 1961 (Buffalo, NY); 1962 (Southern Region)

DELAWARE VALLEY SECTION
Dec 4 (Philadelphia, Pa)

HUDSON-MOHAWK SECTION
Jan 15, Mar 27 (Chelsea House, Tribes Hill, NY); May 20 (Ladies Night); June 24 (Annual Outing)

METROPOLITAN SECTION
Jan 15, Feb 19 (Hotel New Yorker, New York, NY); Mar 18, Apr 22 (Kohler's Swiss Chalet, Rochelle Park, NJ); May 20 (Ladies Night—Swiss Chalet); June, 1960 (Outing)

NIAGARA FRONTIER SECTION
Dec 11 (Annual business meeting, Buffalo, NY)

NORTHERN NEW ENGLAND SECTION
Dec 4 (Motel 128, Dedham, Mass); Jan 15 (Joint symposium with ASME Textile Engineering Div, Woodlawn Golf Club, Newton, Mass)

PIEDMONT SECTION
Jan 22-23 (Poinsett Hotel, Greenville, SC); Apr 2-3 (Hotel Robert E Lee, Winston-Salem, NC); June 3-4 (Outing—Ocean Forest Hotel, Myrtle Beach, SC); Sept 23-24, 1960 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION
Dec 4 (Annual Meeting—Johnson's Hummocks Grille, Providence, RI); Jan 29 (Johnson's Hummocks); Mar 25 (Providence Engineering Soc); Apr 29 (Student Night); June 24 (Outing—Metacomet Country Club); Sept 23, 1960 (Management Night); Oct 28, 1960 (Providence Engineering Society); Dec 2, 1960 (Annual Meeting—Johnson's Hummocks)

SOUTH CENTRAL SECTION
Feb 7 (Hotel Patten, Chattanooga, Tenn); May 13-14 (Outing—Riverside Hotel, Gatlinburg, Tenn); Sept 10; Dec 9, 1960 (Hotel Patten, Chattanooga, Tenn)

SOUTHEASTERN SECTION
Dec 5 (Atlanta Athletic Club, Atlanta, Ga); Feb 20 (Ida Cason Callaway Gardens, Pine Mountain, Ga); Apr 16 (Atlanta Biltmore Hotel, Atlanta, Ga); June 10 (Outing—Radium Springs Lodge, Radium Springs, Ga); Sept 17, Dec 3, 1960 (Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Dec 4 (Hartford, Conn)

MID-WEST SECTION HONORS PAST CHAIRMEN—Seated, l to r: Arthur I Hultberg (1955-1956); Weldon G Helmus, AATCC president; Joseph H Jones (1948-1949); Elliott Morrill (1950-1951); Herman F Boxser (1939-1940). Standing, l to r: Arthur T Brainerd (1935-1936); Archie G Alexander (1941-1942); J Gordon Stott (1954); Aloysius J Fiet (1945-1946-1947); Alfred J Olson (1952-1953)

Northern New England

NORTHERN NEW ENGLAND SECTION has revised its plans for the forthcoming December 4th meeting at the Motel 128, Dedham, Mass. The original plans called for a joint meeting with the ASME Textile Engineering Division, but this has been postponed to the January 15th meeting.

Revised plans for the December 4th meeting call for the annual business meeting and election of officers, and an address by Norman R S Hollies, research supervisor, Harris Research Laboratories, Washington, DC, on the subject "Wool-like Properties of Blended Fabrics".

* * *

The NNE Section held its 34th annual outing recently at the Wachusett Country Club, West Boylston, Mass, with approximately 150 members and guests in attendance.

Cochairmen for the event were Henry X deRedon, Ciba Co Inc, and James O Aronson, United Aniline Co. They were assisted by the following committee: Basil Nicholson, E I du Pont de Nemours & Co, Inc, *golf*; Hans Walz, Sagamore Color and Chemical Co, *horseshoe pitching;* William Siebert, Geigy Dyestuffs, *putting contest*; John Murphy, United Aniline Co, *baseball*; Philip Durfee, W C Durfee Co, *treasurer*; Ben Worsman, *flycasting;* and John R Markgren, W C Durfee Co, *reservations.*

Winners of the various golf events were as follows: Low gross, members (0-13 hcp)—F A Murphy, Stevensons (USA) Inc; Low gross, members (14-23 hcp)—V L Wilkinson, Rodney Hunt Machine Co; Low gross, members (24 & up hcp)—Arthur R Wachter, American Viscose Corp; Low gross, guests—S Virostex, Putnam Woolen Div, Bachmann Uxbridge Co.

The putting contest was won by G Melanson, Arms Textile, Manchester, NH. Top man in singles horseshoes was Sam Braniff, while the doubles, in a spirited contest, was won by John Markgren and Earl Bullard. The fly casting contest was won by R Tabloski, Derby Co.

Dick Bower, Putnam Woolen Div, Bachmann Uxbridge Co, was presented the Snake Killer Award by

Sectional Chairman Robert Robinson. This special award, in reality a tribute to a higher mathematician of unquestioned integrity, is presented each year to the golfer turning in the highest score.

(Photos courtesy of L E Rossiter)

F A Murphy, Stevensons (USA) Inc, member low gross (0-13 hcp)

G Melanson, Arms Textile, winner of putting contest

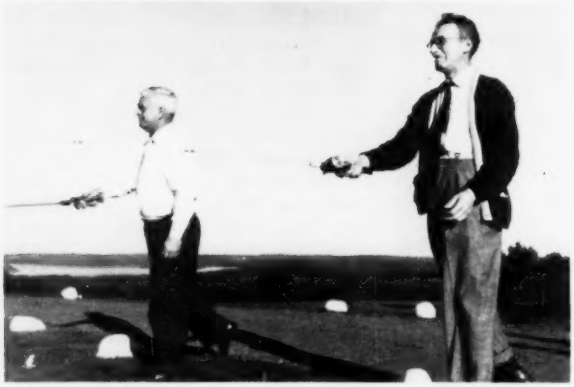
R Tabloski, Derby Co, winner of flycasting contest

Snake Killer Award is presented to Dick Bower (left), Putnam Woolen Mills, by NNE Section Chairman Bob Robinson

Steve Virostex, Putnam Woolen Co, guest low gross

A R Wachter (center) receives award for low gross, members (24 & up hcp) from NNE Outing Chairman Henry X deRedon (right) while Cochairman James O Aronson looks on

Trio ready for dinner at NNE Outing: l to r: John Kilbride, Berkshire Hathaway; Don Pearson, Berkshire Hathaway; Tom Fahey, Nopco Chemical



Jerry Quigley (left), Agawam Dye Works, and Paul Vanasee, Sandoz, Inc, try ther hands at flycasting

Foursome returning to Clubhouse—l to r: Caddie, Fran Shay; Ed Britton, Hilton Davis; Glenn Jackson, Nashua Finishing; Bob Easdon, Nashua Finishing; Bill Green, Hilton Davis

(Photos courtesy of Angus H Roberts, Jacques Wolf & Co)

Western New England

WESTERN NEW ENGLAND SECTION held its Annual Meeting and election of officers on October 23, 1959 at Rapp's Restaurant, Shelton, Conn.

Officers elected for 1960 are as follows:

Chairman—Albert H Rant, Laurel Soap Mfg Co

Vice chairman—Timothy J Horan, Princeton Knitting Mills, Inc

Secretary — Henry C Speel, Schwarz, Speel & Associates

Treasurer—Murray N Lefkowitz, Indian Orchard Finishing Co

Councilor—Andrew W Goodwin, Princeton Knitting Mills, Inc

Sectional Committeemen—Alexander H De Marco, Shelton Hosiery Mills, Inc; Lawrence M O'Connell, Princeton Knitting Mills, Inc: Vasil J Pappas, Thal Dyeing Co; John E Hirn Jr, National Aniline Div.

Approximately 35 members and guests were in attendance.

WESTERN NEW ENGLAND SECTION OFFICERS FOR 1960—Seated, l to r: Timothy J Horan, vice chairman; Albert H Rant, chairman; Henry C Speel, secretary; Murray N Lefkowitz, treasurer. Standing, l to r: Vasil J Pappas, John E Hirn Jr, Alexander H DeMarco, sectional committeemen; Andrew W Goodwin, councilor; Lawrence M O'Connell, sectional committeeman.

South Central

SOUTH CENTRAL SECTION has announced the following meeting schedule for 1960:

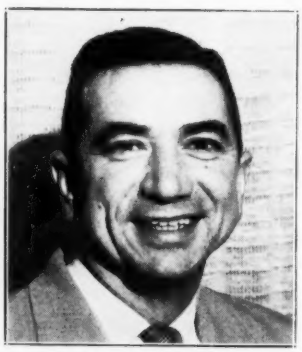
February 7—Hotel Patten, Chattanooga, Tenn. L R Greenwood, Southern Dyestuff Corp, in charge of meeting.

May 13-14—Summer Outing at Riverside Hotel, Gatlinburg, Tenn. Frank Smith, Ciba Co Inc, in charge.

September 10—Jack McNab, Mac Chemical Co, in charge.

December 9—Hotel Patten, Chattanooga, Tenn. James Burkart, Burkart-Schier Chemical Co, in charge.

The following committee chairmen have been appointed for 1960: *Membership*—Joe D Mosheim, Crystal Springs Bleachery; *Arrangements*—Lowell Shive, Arnold, Hoffman & Co, Inc; *Publicity*—Betty Ellis, *Daily News Record.*



LOWELL SHIVE
Secretary, South Central Section

R J TYRRELL
Vice chairman, South Central Section

(Photo by Kenneth C Everett)

EDMUND WATERS, head of the New Fiber Dyeing Section, Imperial Chemical Industries' Dyestuffs Div, Manchester, England, spoke on the subject "Reactive Dispersed Dyestuffs for Nylon" at the October Meeting of the Rhode Island Section (see page 59 of November 2 issue).

General Calendar

AMERICAN ASSOCIATION FOR TEXTILE TECHNOLOGY
Dec 2, Jan 6, Feb 3, Mar 2, Apr 6, May 4, June 1 (Della Robbia Room, Hotel Vanderbilt, New York, NY)

AMERICAN COTTON MANUFACTURERS INSTITUTE
April 7-9 (11th Annual Meeting, Americana Hotel, Bal Harbour, Miami Beach, Fla); Mar 23-25 (12th Annual Meeting. Fontainebleau Hotel, Miami Beach, Fla)

AMERICAN SOCIETY FOR QUALITY CONTROL, TEXTILE DIVISION
Feb 18-19 (10th Annual Conference, Clemson House, Clemson, SC)

AMERICAN TEXTILE MACHINERY ASSOCIATION
May 23-27, 1960 (American Textile Machinery Exhibition, Auditorium, Atlantic City, NJ)

FEDERATION OF BRITISH INDUSTRIES
June 10-26 (British Exhibition of Industry, Technology, Science and Culture —Coliseum, New York, NY)

INTER-SOCIETY COLOR COUNCIL
April 11-12, 1960 (29th Annual Meeting—Philadelphia Museum College of Art, Philadelphia, Pa)

NATIONAL COTTON COUNCIL
Feb 8-9 (Annual Convention, Dallas, Texas); Sept 28-29 (9th Chemical Finishing Conference, Statler Hotel, Washington, DC)

PHI PSI FRATERNITY
April 28-30 (57th Annual Convention, Hotel Roosevelt, New York, NY)

SOUTHERN TEXTILE EXPOSITION
Oct 3-7, 1960 (Greenville, SC)

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION
Dec 2 (Annual meeting and dinner—Hotel Roosevelt, New York, NY)

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, DELAWARE VALLEY SECTION
Mar 26 (3rd Philadelphia Conference of the Graphic Arts Industry—Benjamin Franklin Hotel, Philadelphia, Pa)

TEXTILE RESEARCH INSTITUTE
March 24-25, 1960 (30th Annual Meeting, Hotel Commodore, New York, NY)

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1959

COLOUR INDEX NOW COMPLETE!

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The First Edition of the COLOUR INDEX was published in 1924 and now, thirty-four years later, the Second Edition is ready for you. You cannot afford to wait for some future edition. There is no other up-to-date index of world coloring matters.

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ORDER NOW FROM:

American Association of Textile Chemists and Colorists

PO Box 28, Lowell, Massachusetts

IMPORTANT NOTICE

To all manufacturers of Textile Chemical Specialties:

The American Association of Textile Chemists and Colorists is now collecting material for the 1960 Edition of the Technical Manual and solicits your cooperation.

The list of Textile Chemical Specialties will be completely revised. The object is to eliminate all obsolete products and firm names.

PLEASE NOTE: ONLY THE PRODUCTS OF FIRMS THAT SUPPLY THE INFORMATION REQUESTED IN THIS NOTICE WILL BE LISTED IN THE 1960 EDITION OF THE TECHNICAL MANUAL

All manufacturers and importers of textile chemical specialty products, therefore, are notified that information is requested on all current products including those that have been listed previously.

The desired information should be supplied strictly in accordance with the following directions; otherwise it may not be feasible to use it. To meet editorial schedules, all data must be received by the undersigned before December 15, 1959.

WILLIAM D APPEL, Editor, Technical Manual
9101 Jones Mill Road, Chevy Chase 15, Maryland

DIRECTIONS FOR SUPPLYING INFORMATION

Use ordinary white rules 3"x5" index cards (obtainable from any stationery store). Type the information on the cards following the instructions given further on in this notice where the information desired is explained and where examples of cards properly filled out are shown. You will note that the instructions differ from those in previous years and that they are designed to make your task easy.

It is necessary that you follow the instructions carefully; cards not correctly filled out will be returned to you for improvement. In particular, please use capital letters only where they are required; for example, at the beginning of sentences, in the key to the firm name, and at the beginning of trade names. Please see that the "Chemical Nature" of each product is properly recorded. We do not ask you to reveal secret information, but such vague descriptions as "amine compound" and "organic salt" are not considered adequate. Please check your cards carefully to avoid errors in the printed list.

In compiling the list, products are entered primarily for their specific usefulness in textile processing, with the idea of presenting information for the benefit of textile chemists. However, because some textile chemicals, such as surface-active agents, are employed in other industries, nontextile uses may also be indicated.

Please bear in mind that the information received from you regarding the uses and chemical nature of your products will be reported without investigation and thus cannot be vouched for by the AATCC. On the other hand, because products are listed without charge for the benefit of our membership, we reserve the right to edit all data received and especially to revise the list of "various uses" where necessary to conserve space.

I. KEY

ABCDE

ABCDE Chemical Company

24 South Main Street

Deep River, Conn.

(a) On first line: key to firm's name. See 1959 Technical Manual pages 387-393. Take care to use capital letters correctly. Key is limited to not over 5 letters.
(b) On third line: name of firm
(c) On fourth and fifth lines: address of firm.

NOTE: ONLY ONE KEY CARD IS NECESSARY FROM EACH MANUFACTURER

II. INDEX ENTRY

Bleaching Agents

Ableachor ABCDE

(a) On first line: one of the headings from the index in the 1959 Edition, pages 393-428, indicating an important use for the product being reported. If it has several uses, make a separate card for each.
(b) On third line, toward left: list the name of the product (only one) without any descriptive letters or numbers.
(c) On third line, near right margin: give the key to the name of your firm (see above).

III. ALPHABETICAL LIST ENTRY

ABCDE

Ableachor* CWS

Bleaching of all fibers

H_2O_2

(a) On first line: key to firm's name
(b) On third line: complete proprietary name of product, with descriptive letters or numbers; if name of product is a registered trade-mark, indicate the fact by an asterisk following the registered part of the name.
(c) On fifth line: write "correctly listed in the 1959 Manual" if the information on uses and chemical nature given there is correct; otherwise give
(d) On fifth line: various uses, limited to 20 words.
(e) On eighth line: chemical nature, adequately given.
(f) On tenth line: patent number, if product is patented.

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FOUNDER

LOUIS A OLNEY
(deceased)

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STUDENT CHAPTERS

Alabama Polytechnic Institute, Bradford Durfee College of Technology, Clemson College, Georgia Institute of Technology, Lowell Technological Institute, New Bedford Institute of Technology, North Carolina State College, Philadelphia Textile Institute, Rhode Island School of Design

NOVEMBER NEIGH
1959

Inter Alia—Inter Nos

P J WOOD

FROM OLD TIME AIDERS, ABETTORS, ADHERENTS AND ACCOMPLICES

A nice, chatty letter bringing us up to date on the J B Martin Co from Pierre J Theve, returning a number of the Journal of SDC, which he borrowed earlier in the year to read the George Douglas lecture on finishing by Walter Gutmann; a short but friendly card from Charley Seibert promising to write at greater length anon; a post card from Israel sent by Sid Edelstein, who, according to the photo in the November 16th ADR, was recently in England with Joe Evans to present the Dexter Award to John Read for outstanding contributions to the History of Chemistry. The learned Dr is professor of chemistry at the Univ of St Andrews, Scotland. Al Sampson wrote a poem of several stanzas in which all the words in the ode started with "W". Very clever, Al. A copy of "FELISOL, an International Informative Label for Colour Fastness" reached us from the author, K McLaren, who mentioned that he is an alumnus of our good old colleges, Univ or Leeds; which reminds us that J C Withers wrote giving the address of the Bradford Textile Society, which publishes an interesting annual that we would like to have had. It costs 12/6. Not having 12/6 in our jeans at the moment, we marked this for the future. He told us that our colleague on the faculty, Aldred F Barker was at Leeds U until 1926 and that he is still alive somewhere in Australia and is "well over 90 years old". As Carl Brubaker would say, "Whatta man".

DERIVATION

Receipt of a postcard from Leon E Moody, showing a very good photograph of Heidelberg - Alte Neckarbruecke und Schloss, took us back in memory to that summer we lived in that quaint old town on the Neckar, and commuted every day (third class) to Mannheim, taking the streetcar from there to Ludwigshafen to work at the Badische Anilin- und Sodafabrik. Leon said he had been doing the same thing (except that he would undoubtedly travel first class) and that, after a short vacation, he was returning home to take up his new job as vice president and general manager of Putnam Chemical Company, the Badische branch located at Beacon, NY.

We remember asking Herr Doktor Chambon, who was chief of the new synthetic indigo laboratory, at that time, the derivation of the word Pumpernickel, a nickname commonly used for that black rye bread commonly eaten in those parts. He told us that it went back to the time of one of the Napoleonic wars, when French soldiers were over-running Germany. According to Dr Chambon, one of these soldiers asked for something to eat; he was handed a piece of black bread; scornfully looking at it he remarked, "Pas pour moi" (Not for me), "Il est bon pour Nickel" (it is good for the horse). This expression "bon pour nickel" eventually devolved into pum-per-nickel or pumpernickel, as we now know it.

Many folks know rye only as a spirituous liquor, for the edification of such individuals we might add that it is a grain, the seed of a hardy cereal grass, indigenous to many countries, the Latin name of it is secale cereale, which gives rise to the name pane segale, the black bread of Italy and pain seigle, the French equivalent.

One of the chemical journals, on the one page where levity leaks in, reports the rumored merger of one of the larger pump companies and a nickel producer, with the idea of manufacturing pumpernickel.

DEFINITION

π, a Greek pizza.

PHI PSI

In one of the hottest days in June, 17 stalwarts of this well-known textile fraternity gathered in the cool basement of Phi Gamma Delta Club in New York, to discuss plans for the annual convention of the order, to be held in April 1960.

Management of the entire affair was entrusted to the capable hands of Roger A Lewis of Union Carbide and Douglas F. Grady of Thorndike-Deland.

In case this column should fall into the hands of any Phi Psi men, this short squib will serve to notify them that Doug and Roger will require the assist-

ance of many of you to make this affair the success it ought to be, considering that the brethren of this frat represent the creme de la creme, the essence de l'essence, the ne plus ultra of the entire textile industry. So get off your lazy fauteuils and write Roger and Doug, immediately if not sooner, as Elmer is fond of saying, that you are ready, willing and able to stand by them in this hour of need.

Incidentally, Ben Bellemere is now National President, Doug Ix is chairman of N Y Alumni Chapter and George Linton is secretary; every one of them a busy beaver in his own right.

We got there a bit early. The board of directors was still in session. As a slight token of respect, they put us on a committee.

TRANSPORTATION

The recent news that application has been made to merge the two railroads serving our home district, the two which have carried us safely and more or less comfortably to and from New York, for the last 50 years, be the same more or less, is somewhat disturbing. This news item, taken in conjunction with the various petitions of the Erie RR for permission to lop off a passenger train from time to time, seems to indicate that it will only be a matter of time when passenger service will cease altogether on these two railroads.

Much fun has been poked at both lines, the Erie was frequently referred to as the Weary RR, while the Lackawanna was often called Delay, Linger & Wait, from the full name of the road Delaware, Lackawanna and Western. In fact, like Ford, who subsidized stories about the sins of commission and omission of the "Tin Lizzie", the Erie, at one time, used part of the precious space on its monthly-issued timetables for stories regarding its behavior according to its patrons. They even offered a prize for the best name for the cutting resulting from the abolition of the tunnel under Union City or was it Hoboken? The prize was awarded for the name "Bergen Archways", a name which died a natural death and was buried without benefit of clergy.

At the American Silk Dyeing and Finishing Company, owned by the celebrated Arnold brothers, Tommy, William and George, we used to ship goods each night by Fullers' Express. Fuller had an arrangement with the Erie RR to take the load down to Jersey City, where other Fuller trucks (horse-drawn) picked up the goods and made delivery to the silk houses around Howard, Green, Wooster, Canal, Grand and Prince Streets, not a long trip after crossing the river on the Erie Ferry. Erie probably took a solid trainload of dyed and printed goods from Paterson to Jersey City every night in the week, except Sunday.

When this automobile age came into being, Fuller fizzled out. Many of the larger manufacturers and dyehouses had their own trucks carrying their own merchandise and that profitable line was denied the railroad. The trucks brought back a "Payload" of some or other type, mostly greige goods for processing, in the case of the dyers. Another loss for poor old Erie.

Passenger travel was good until the advent of passenger automobiles that could be relied upon to go to New York and back without puncture, or some kind of mechanical failure. Then the exodus from that favorite form of transportation really began. It became fashionable to say, "I never go on the train (sniff! sniff!)". These individuals joined the ranks of the elite, the rest of us still travelled on the train with the hoi polloi. Presently the elite outnumbered the hoi polloi. This was too, too bad for the Erie and the DL & W.

Travelling on the train, in our humble opinion, had many advantages not the least of which was the meeting with many men, which we have ever found to have a democratizing and humanizing effect. Many a good story have we gleaned from those contacts; often have we received a fillip from the cheery chit-chat that made a good start for what might have been an otherwise uninteresting, even if not dolorous day.

What started us on this chain of thought was a paragraph in the article by John McCarthy in "Columbia", publication of the Knights of Columbus, in which he puts together some figures comparing the degree of safety to be expected in the various forms of travel. Says McCarthy, "For each 1,000 passenger miles, fatality rate for cars and cabs was 2.6; for busses, 0.4; for airplanes, 0.12; for railroads, 0.07".

Good old railroads!------Q.E.F.

News of the Trade

B F Goodrich Chemical Forms Textile Chemical Unit

A "crosslinking" of diversified chemical product lines into a marketing and development unit designed to increase its business in the $400 million textile chemicals market was announced last month by B F Goodrich Chemical Co.

H B Warner, vice-president, marketing of the B F Goodrich division, said the move makes the company "the only supplier in the industry to offer to the textile finishing and converting trade such a broad range of chemicals for use in upgrading fabrics and improving textile manufacturing processing."

The company recently held a week-long "trade" show at the Sheraton-Atlantic Hotel (formerly the McAlpin) in which it displayed and demonstrated products and processes for improving such physical properties of fabrics as wear resistance, colorfastness, hand and drape, stretch control, shrinkage control, ravel resistance and textile printing and coating.

Mr Warner said that new chemicals and production methods may make it possible in the future to produce outerwear fabrics so inexpensively that they may be thrown away when wrinkled.

He pointed out that such traditionally unexciting fabrics as denim, nonwovens, calico and broadcloth can be turned into products that outshine many of the new, more expensive "miracle" fibers and fabrics.

The exhibit, designed to inform fabric converters and finishers of the possibility of chemical treatment, featured the following basic raw materials: vinyl, acrylic, nitrile and vinyl acetate latices and Carbopol, a dispersing, suspending, and penetration control agent introduced by the company last year.

Mr Warner said the textile industry "is just beginning to skim the surface of the possibilities of chemical treatments for fabrics," and that the over-all market for textile chemicals, estimated at $400 million this year, is expected to increase next year. The products manufactured by B F Goodrich Chemical fit into a $50 million niche in this market, he said.

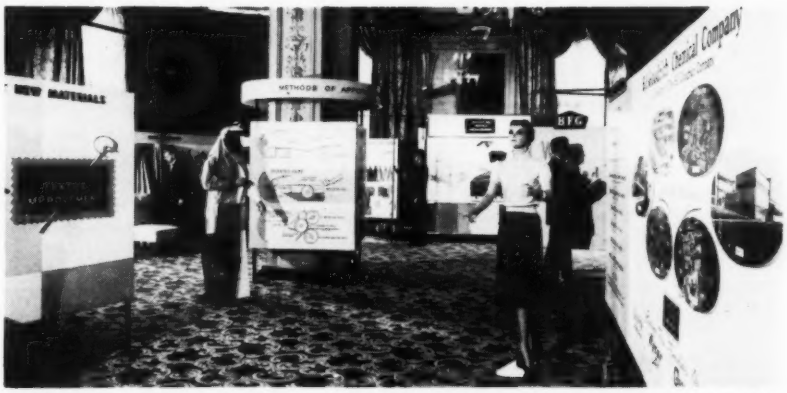
"The low initial cost of fabric treatment and finishing with chemicals can be the key to an unprecedented era of progress in the textile industry," Mr Warner said. "The firm which takes an inexpensive product and improves it with chemicals stands to gain advantage in the tremendously competitive textile business."

He revealed that the company is experimenting with a new acrylic latex that may make possible the expansion of nonwovens into outerwear fabrics. Tests show the new latex simplifies compounding, reduces processing cost, increases stability and provides the washability and drycleanability that heretofore have been major obstacles in using this type of construction for outerwear, he said.

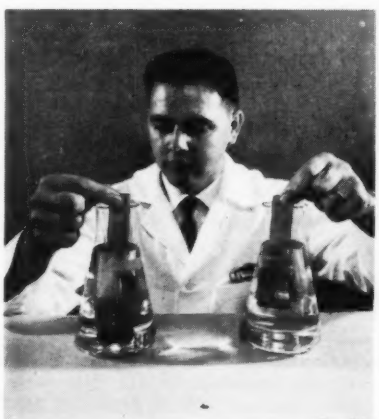
"Should this problem be solved," Mr Warner said, "it would mean the manufacture of fabrics on a straight-line basis—as paper is now made—which could utimately result in such extremely low cost fabrics that you could buy a suit, wear it until it became wrinkled and then throw it away."

Most of the nonwoven apparel uses today are in such inner constructions, as shirt collars and necktie linings, he said. Early steps in the move to outerwear would be in disposable work clothes, jackets and uniforms. Some progress has already been made in this area.

Examples of the progress being made in this field, Mr Warner said, include disposable nonwoven golf and bowling towels and industrial wiping cloths, where the costs are compar-



TEXTILE IMPROVEMENTS———New ideas for upgrading textiles were displayed in a week-long "trade" show sponsored by B F Goodrich Chemical Company at the Sheraton-Atlantic Hotel, New York.



WEIGHTY———A nonwoven fabric, right, treated with acrylic latex is not affected by drycleaning solvents, which rapidly deteriorate nonwoven fabrics treated with conventional binders, left. The company pointed out that the new latex may make possible the expansion of nonwovens into outerwear fabrics.

SMOOTHIE———Chemicals that control penetration and aid the flow of materials used in printing and coating fabrics are demonstrated. Spread coating, shown here, is accomplished to provide a reversible tablecloth that contains the best qualities of both plastic and "pure" cloth.

able to paper household towels but the quality approaches that of more expensive cloth towels.

Some of the firm's chemicals, Mr Warner said, make it possible to spray decorative finishes on fabrics. This means that "printing" can be done on a production-line basis, eliminating the cost of engraving rolls and heavy fabric printing equipment. At a demonstration, the company showed how fabrics could be permanently decorated with spray equipment.

He said chemicals make possible the efficient production of a two-faced fabric, envisioned as "the perfect tablecloth," by giving it a coating that makes it resistant to stains yet retains the feel and washability of the finest fabrics.

Mr Warner pointed out that the chemicals being grouped for distribution in the textile industry are all materials developed by the company in its research in the fields of plastics and rubber. "These materials are a natural outgrowth of our research," he said. "They are basically the same as those we market to other industries for use in products ranging from high-fidelity records to heavy motor vibration mounts, from cosmetic components to baby pants."

He said the company's first steps into the textile field were in 1952 when an intercompany committee was formed to explore the possibility of chemical products for textiles. Later L L Shailer was named manager of textile chemicals sales development and has been given the responsibility for developing the market for the company.

B F Goodrich Chemical Company maintains manufacturing facilities for plastics, rubber and chemical raw materials at Avon Lake, O, Henry, Ill, Niagara Falls, NY, Louisville, Ky, Calvert City, Ky, and Akron, O.

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Wyandotte Establishes New Division

Establishment of a Corporate Development and Planning Division of Wyandotte Chemicals Corporation was announced recently. Director of the division will be John H Reifel, long-time Wyandotte executive who has been director of the Engineering and Development Division.

The engineering department of the latter division will be merged into the Michigan Alkali Division of the company in a reallignment of responsibilities.

The newly established division will coordinate the forward planning of the company.

Borden's Completes New Pilot Plant

Completion of a new pilot plant, first step in the $2½ million expansion program at its Leominster, Mass, operation, has been announced by the Borden Chemical Company.

Designed to produce up to 1,000-pound lots of polyvinyl alcohol, polyvinyl acetate, acrylics, butadiene-styrene and other products, the pilot plant is being operated by Borden Chemical's Polyco-Monomer department. It was designed and planned by the company's central engineering department and built by United Engineers and Constructors.

Currently under construction at the Leominster site are new development and technical service laboratories, a new unit for the production of butadiene-styrene products, a new polyvinyl alcohol plant using a Borden-designed continuous process, and facilities for the manufacture of Lemoflex, a resin used in producing water-soluble packaging film.

C W Smith, general manager of the Polyco-Monomer department, said that all the new facilities are expected to be completed and in operation by early next year.

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Millson to Address CATCC Section

The Ontario Section of the CATCC will hold its December meeting on Friday, December 4, 1959, in Macdonal Hall, Ontario Agricultural College, Guelph, Ontario.

The speaker will be Henry E Millson, American Cyanamid Co, whose subject will be "Microscopical Studies on Dyeing with Time Lapse Motion Picture Photography."

Members of the Chemical Institute of Canada have been invited to attend this important meeting.

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GAF's Dyestuff & Chemical Div Managers Meet at Skytop

The Dyestuff and Chemical Division of General Aniline & Film Corp held its annual meeting of all managers in the Division, October 27-30 at Skytop Lodge, Skytop, Pa.

This conclave, attended by 60 people, presented an intensive program of review of the past year's activities and accomplishments, and outlined planning for all major areas to which the company wishes to direct its future efforts in the next decade.

John Hilldring, chairman of the board of General Aniline & Film, addressed the group after the luncheon on Thursday, October 29th.

All major phases of company operation were discussed. This included current and future financial and profit projections, personnel relations programs and recruitment, sales and marketing plans and developments, advertising plans and objectives, public relations programs, plant engineering and expansions, traffic and materials handling, branch office management, and basic and applied research in all of Dyestuff and Chemical Division's product areas. These incorporate pigments and dyes, acetylene derivatives, surfactants, intermediates, ethylene oxide, brighteners, and a roster of other chemicals. The Antara Chemicals, General Dyestuff Company, and Pigment Sales divisions of the Dyestuff and Chemical Division also participated in these meetings.

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PTI Evening College Offering New Courses in Plastics, Textiles, Dyeing

The winter quarter of the Evening College of the Philadelphia Textile Institute, Philadelphia, Pa, offering instruction in the field of plastics in conjunction with the Educational Committee of the Society of Plastics Engineers, will begin on Tuesday, December 8th and run twelve weeks through March 10th.

Registration for this program will be held Thursday, December 3rd and Monday, December 7th, 7:00 till 9:00 PM.

Courses to be offered in this quarter include: polymer science, casting plastics, design of plastic products, organic finishes and paint technology, reinforced plastics, compression and transfer molding, economics and management problems of the plastics industry and extrusion of plastics.

In the field of textiles, there will be two special courses offered in modern textile technology and dyeing technology.

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Additional Products Available from City Chemical

City Chemical Corp, 132 West 122nd St, New York 11, NY has announced the availability of the following compounds: zinc citrate, strychnine arsenate, sodium zinc uranyl acetate, and manganese pyrophosphate.

While these compounds are currently being prepared on a laboratory scale, adequate facilities are available for their preparation in commercial quantities, the Company states.

TECHNICAL LITERATURE

(Literature is available from sources shown in italics)

A/Z ROLL-TYPE CURING MACHINE—*The Adams/Zeller Corp, 141 E Glenside Ave, Glenside, Pa*—Illustrated 4-page bulletin describes and illustrates a new roll-type curing machine for resin-type finishes. Tells how new design with roll-to-roll control of tension assures better fabric finishing. Shows catwalk at floor level which makes machine completely accessible for threading-up, adjusting, and cleaning.

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ANNUAL REVIEW OF HALOGENATION — *Columbia-Southern Chemical Corp, One Gateway Center Room 2089, Pittsburgh 22, Pa*—Bound volumes of reprints of Earl T McBee's "Annual Review of Halogenation" covering the past ten years are now available from Columbia-Southern.

Dr McBee is head of the chemistry department at Purdue University and since 1948 has authored his famous reviews on halogenated compounds. Based on the four halogens—fluorine, chlorine, bromine and iodine—the halogenated organic compounds have made possible an increasing number of new products—dyes, drugs, insecticides, fuels, plastics, fibers and metals.

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BEL-ART PLASTIC ENCYCLOPEDIA—*Bel-Art Products, Pequannock, NJ*—This new plastic "encyclopedia" reportedly contains almost every laboratory utensil or container made of polyethylene, polypropylene, vinyl, acetate, Teflon, nylon, etc, that is now available. The catalog measures 8½" × 11", contains 32 pages, and is printed in two colors.

All the plastic apparatus are indexed and cross indexed; models, sizes and prices are in chart form. Graphically illustrated chart of plastic characteristics is also part of the catalog.

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BORDEN CHEMICAL PRODUCT CATALOG AND DIRECTORY—*Dept H, The Borden Chemical Co, 350 Madison Ave, New York 17, NY*—Catalog lists specifications, end-uses, and other technical data for the more than 1000 products manufactured and distributed throughout the world by The Borden Chemical Co.

Borden Chemical industrial and consumer products are reviewed in the general areas of basic chemicals, monomers, polymers, resins, adhesives, coating materials, plastic products, fine chemicals, organic intermediates, and biochemical reagents.

1,2-BUTYLENE OXIDE—*Technical Service and Development, The Dow Chemical Co, Midland Mich*—This newly available compound is the first single-isomer butylene oxide product commercially available. Dow said it offers users higher reactivity and better control of reaction product than is possible with isomeric mixtures.

This 6-page bulletin discusses the actual or potential utility of 1,2-butylene oxide and its derivatives, as textile chemicals, stabilizers, solvents, petroleum additives, plasticizers, lubricants, surface-active agents, flotation agents, fire retardants, plastics products, and catalysts. The bulletin also includes properties and handling information.

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CELLOSOLVE AND CARBITOL—*Union Carbide Chemicals Co, 30 East 42nd St, New York 17, NY*—This 40-page booklet contains comprehensive data for 14 glycol-ether solvents, including physical properties, chemical derivatives, end-use possibilities, storage, and handling, physiological properties, specifications limits and test methods. A detailed bibliography and references section is included.

The glycol-ethers are miscible with most liquids, and are mild-odored solvents for resins, dyestuffs, oils, waxes, fats, and other organic materials.

As chemical intermediates, the glycol-ethers can be esterified, etherified, chlorinated, or otherwise modified at the reactive hydroxyl group.

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CHARACTERISTICS AND APPLICATIONS OF POTATO STARCH AVAILABLE FOR THE TEXTILE INDUSTRY — *Morningstar-Paisley, Inc, 630 West 51st St, New York 19, NY*—This 4-page bulletin, written to inform both the chemist and mill man about starch selection and use, gives detailed descriptions of important physical properties of potato starch and relates these properties to textile processing. In addition, the bulletin contains data on warp-size preparation and outlines the advantages of potato starch in warp sizing, thread dressing, and fabric finishing.

The bulletin will be of interest to textile and thread processors because of recent improvements in potato starch through plant modernization and precise quality-control methods. High-quality textile potato starches reportedly will meet the following standards: 1) high cleanliness—freedom from pulp, fiber, dirt, grit and specks; 2) uniform moisture content, without the brownish color caused by over-drying; or soggy feel and grayish color caused by under-drying; 3) low ash content (0.2 to 0.3 percent) to assure a more uniform paste with no unexploded granules; 4) a slightly acid pH to meet requirements of water obtainable in the majority of localities.

Advantages offered by potato starch are said to include: 1) elimination of the need for weighters or moisture attractants; 2) high viscosity reduces the amount of potato starch that has to be incorporated into the sizing formulation; 3) because of its slower rate of set-back, potato starch intermingles with the fibers to offer a well-protected yarn; 4) because of its ability to absorb and retain moisture over a long period of time, potato starch contributes to more flexible warps and rounder and smoother beams; 5) long moisture retention allows the lowering of relative humidity in weave sheds; and 6) the dried film is highly soluble in water, so the size is removed more easily than with cereal starch products.

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CHARLOTTE COLLOID MILL-SUSPEND - HOMOGENIZE - DISPERSE - EMULSIFY—*Chemicolloid Laboratories, Inc, 55 Herricks Rd, Garden City Park, LI, NY*—This new 8-page brochure, which was released in September, presents complete coverage of the "G" Series and "ND" Sanitary line of Charlotte Colloid Mills.

The brochure covers the following points: The Charlotte® principle—hydraulic shear plus; Advantages for Charlotte Colloid Mills; Eight vital points of improvement on the "G" Series; Specifications for the "G" Series; Guide to Charlotte Models G-3, G-5 and G-10, G-20 and G-30, G-75, G-100 and G-125, ND-1,2,5,10, 20, and 40; Operation of a Charlotte Colloid Mill (handwheel adjustment, easy cleaning); Discussion and specifications of Charlotte ND Sanitary Models ND-1 thru ND-40; Charlotte laboratory and pilot-plant models; Applications.

For the preparation of clear paste for textile printing, a standard procedure reportedly has been established based on the Charlotte Mill. It is said to be used in making colors

of the proper consistency and color value. A wide range of vat dyestuffs is said to be effectively produced through its exclusive shear principle, supplanting former batch methods. It reportedly eliminates specking and crossovers in dyeing operations.

It is claimed that textile chemicals, emulsions, and specialties such as waterproofing compounds, delustrants, sizings, etc are produced more economically and consistently with Charlotte mills.

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CHEMICAL INDUSTRY FACTS BOOK (4TH EDITION)—*$1.25; Manufacturing Chemists' Assoc, 1825 Connecticut Ave, NW, Washington 9, DC*—Designed as an aid to economists, journalists, students, teachers and others requiring specific information on the chemical industry and its products, this illustrated book contains material on virtually every aspect of the field.

The 87-year-old MCA is an industry group representing more than 90 percent of the chemical production capacity in the US. A new edition of its Facts Book is published every two years.

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CHEMICAL WORDS—*Cheminform Institute, Coliseum Tower, New York 19, NY*—"Chemical Words" is the subject of a paper delivered at the recent Atlantic City meeting of the American Chemical Society. It explains certain aspects of trademarks, trivial, generic and special technical words as used in science and industry. It describes the system used in compiling and maintaining a file giving the chemical composition, use and source of many chemicals and chemical products.

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CHEMISTRY OF FATTY ACIDS—*Armour Industrial Chemical Co, 110 North Wacker Dr, Chicago 6, Ill*—This 32-page revised edition describes in detail the preparation, characteristics and applications of Armour's 30 fatty acids, trademarked Neo-Fat.

Specification, sources and composition of fatty acids, saturated and unsaturated types and synthesization of fatty acids are also covered.

Another section is devoted to fatty acid reactions, while the third major part of the booklet reviews the handling of fatty acids in shipment, storage and in use.

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CSI CATALOG NO. 59A—*Custom Scientific Instruments, Inc, Kearny, NJ*—Contains illustrations and brief descriptions of 73 testers or equipment manufactured as standard products. These units are grouped under the following headings in the index: Abrasion Testers, Biological and Scientific Equipment, Flammability—Ignition Testers, Production, Control and Research Equipment, Thermal Conductivity—Dielectric Units and Thickness, Compression and Recovery Gages. One feature stressed in this catalog is the ability of CSI to custom build testers or equipment of all types for individual and general needs.

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DYEING ARNEL/COTTON BLENDS—*Sandoz, Inc, 61 Van Dam St, New York 13, NY*—Arnel/cotton blends are growing in popularity for ladies' and men's blouses and shirtings, and for lightweight dress material. A recent report received by Sandoz reveals that outstanding dyeing orders amounted to 50,000,000 yards of various constructions, which is close to 29,000 miles of this fabric.

Sandoz bulletin T-979 outlines the problems involved in dyeing Arnel/cotton blends, and then offers suggestions for solving these problems with disperse and direct dyes. Representative shade match formulas and dyeing procedure are presented for taupe, light green and powder blue shades.

Also included in the bulletin are predyeing procedures furnished to Sandoz by Celanese Corp of America's technical staff, and a method of reserving Arnel in an Arnel/cotton blend.

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EASTMAN PRODUCT INDEX OF INDUSTRIAL AND SPECIALTY CHEMICALS — *Eastman Chemical Products, Inc, Kingsport, Tenn*—The industrial chemicals listing features data on physical properties as well as shipping information, and is classified into seven sections: Acids and Anhydrides, Alcohols, Plasticizers, Aldehydes, Aromatic Intermediates, Solvents, and Miscellaneous Chemicals. Specialty products, described separately, include: Cellulose Products, Food Additives, Petroleum Additives, Epolene (low-molecular-weight polyethylene), Agricultural Chemicals, Sucrose Acetate Isobutryate, and Eastman dyes for synthetic textiles. In addition a section is devoted to newly developed products now available for evaluation.

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ELECTRIC-EYES FOR THE PROCESS INDUSTRIES—*Photomation, Inc, 96 South Washington Ave, Bergenfield, NJ*—Bulletin #522 describes the wide range of application for electric eyes directly to process industries. This bulletin, by means of problem and solution, covers some usual and unusual installations that have been made for monitoring of process flows. The bulletin points up techniques used for either gases or liquids and describes standard and special instruments; also, drawings of sample tanks and look boxes are included.

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ESTERS FOR INDUSTRY—*Kessler Chemical Co, Inc, State Rd & Cottman Ave, Philadelphia 35, Pa*—Part I of this 40-page catalog lists specifications, physical properties, and solubility data of fatty acid esters of butyl and propyl alcohols, ethylene glycol, diethylene glycol, propylene glycol, glycerol, and the polyethylene glycols. Part II covers technical data, and Part III, new products.

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ETHYLENE OXIDE — *Antara Chemicals, a sales division of General Aniline & Film Corp, 435 Hudson St, New York 14, NY*—This 48-page manual brings up to date the available information on physical and chemical properties, specifications, analytical procedures, and industrial uses. Extensive data is included on ethylene oxide handling techniques and toxicity, with a detailed 20-page section on storage, explosion-and-fire prevention and control, protection of personnel and first-aid instructions, protective equipment, and tank-car unloading procedures.

●

FANCOSOL P—*W F Fancourt Co, 516 S Delaware Ave, Philadelphia, Pa*—This descriptive literature gives amounts and specifications for usage of Fancourt's new dyeing assistant, which reportedly serves as an effective retarding agent in the absorption of dye by Orlon or any acrylic fibers with basic dyestuffs. It can also be used combined with caustic soda and hydrosulfite to strip vat dyestuffs from fibers.

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FISHER CHEMICAL INDEX—*Fisher Scientific Co, 316 Fisher Bldg, Pittsburgh 19, Pa*—Catalog 123, 365 pages, describes 7000-plus chemicals in one alphabetical listing. It gives structural formulas, formula weights, melting and boiling points, and *Colour Index* numbers. All of ACS's specified reagents are included.

The Fisher Chemical Index also contains instructions on how to store chemicals; defines the various purity grades; and reproduces in miniature a chart of emergency treatments for laboratory mishaps.

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FLOOR-TYPE POWER PERCH OR BURLING TABLE—*Birch Bros, Inc, 32 Kent St, Somerville 43, Mass*

—Circular BB939 illustrates Birch Brothers' Model 5 Power Perch, a modification of the Model 2 Ceiling Perch. Basic equipment and optional features of the new Power Perch, which allows floor mounting, are covered.

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HIGH-SPEED, MULTIPLE-ACTION DISPERSERS—*Charles Ross & Son Co, 148-156 Classon Ave, Brooklyn 5, NY*—Brochure #8-D covers the Company's entire line of dispersers.

Ross Dispersers are used to mix, dissolve, emulsify, deagglomerate and disperse all types of thin or heavy paste materials including those of high viscosity. The brochure describes the design of the multiple action millhead. It shows how all of the material is subjected to tremendous direct impact, intense abrasive action, cutting and shredding, attrition and hydraulic shear, and smashing against inner container shell.

The brochure also illustrates and describes an adjustment in the millhead which can be adjusted for coarse or fine dispersion. This feature is designed to provide more positive control of processing efficiency for production of either one or many different products in the same machine.

Laboratory- and production-size equipment is shown in the removable tank type with variable-speed motor drives and a hydraulic raising and lowering device. Stationary tank-type mixers are also included.

In addition, the new literature incorporates a specifications chart on various size units and covers construction details and tank sizes.

•

HOECHST HTP PROCESS—ACETYLENE AND ETHYLENE FROM HYDROCARBONS — *Hoechst-Uhde Corp, Empire State Bldg, Suite 8204, New York, NY*—This attractive brochure covers the major features of the Hoechst High-temperature Pyrolysis Process (HTP) for the production of acetylene and ethylene from hydrocarbons. The brochure discusses development of the process, offers a description of it, and covers the economics.

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HOOKER CHEMICALS—*Hooker Chemical Corp, Niagara Falls, NY*—Bulletin No. 100-C contains brief descriptions, physical data, uses and shipping information with respect to the many chemicals listed. Chemicals manufactured by Hooker's Phosphorous Division are separately listed and described in a new two-page supplement which is also available.

HOOKER CHLORINATING AGENTS—*Hooker Chemical Corp, Niagara Falls, NY*—Bulletin 328-B summarizes methods and types of reactions in which Hooker chemicals are most advantageously used for chlorination. A list of literature references completes the discussion of each of the chlorinating agents.

Hooker chlorinating agents described are: elemental chlorine, hydrogen chloride, sulfuryl chloride, thionyl chloride, and the chlorides of To assist the user in evaluating each phosphorus, sulfur and antimony. for his own particular requirements, some of the most important aspects of their use in the production of organic compounds are included, as well as the type of chlorination to which each is best adapted.

The brochure also contains a table of physical properties of the chemicals mentioned and literature references to the physical property data.

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INDANTHRENE CORINTH B INFRA PASTE—*General Dyestuff Co, 435 Hudson St, New York 14, NY*—This 8-page circular (G-806) deals with the properties and applications of this new vat dyestuff, which is now being manufactured as a straight product for the first time. The new product is said to have excellent fastness properties, excellent dispersibility, good resistance to over-reduction, high leuco solubility and good dyeing properties. It reportedly has been found suitable for application on cellulosic textiles in any form by any of the various vat-dyeing methods.

This new offering is said to have proved of especial convenience as a strong and economical component in the production of deep chocolate browns, purplish grays, and other combination shades where it is desired to get away from the yellow or green side. It may also be used in self shades ranging from lilac tints to full shades of grayish purplish red. The new dye is being employed for items that go into such end uses as table and bed linen, draperies, upholstery, toweling, washable dress goods and washable play clothing.

In addition to information on working properties, application data, and fastness properties, the new booklet contains vat-dyed cotton and rayon color swatches showing the various shades that may be obtained with the new dye.

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MARLEX, ITS GROWTH—YOUR OPPORTUNITY—*Plastic Sales Div, Phillips Chemical Co, Bartlesville, Okla*—This 26-page brochure illustrates applications and characteristics of the Phillips family of olefin polymers.

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NEW LIST OF COMMERCIAL STANDARDS — *Commodity Standards Div, U S Dept of Commerce, Washington 25, DC*—Catalog No. 978 is a new list of Commercial Standards revised to July 1, 1959.

The new index lists all Commercial Standards under 22 classifications including Apparel and Apparel Sizing; Chemicals; Electrical and Mechanical Equipment; Hardware; Instruments and Tools; Heating, Ventilating and Refrigeration; Household and Hospital Supplies; Lumber and Wood Products; Millwork; Paper and Petroleum Products; Plastics; Plumbing Materials and Fixtures; Pipe and Fittings; Precious Metals; Rubber Products; Textiles; and Thermal Insulation Materials.

New standards in preparation, and existing standards being revised to reflect current industry practices are shown in a supplemental list.

Commercial Standards are voluntary standards adopted by industry to establish nationally recognized quality requirements, including methods of testing, rating, or grading. They also provide a means for certifying and labeling products that comply. They are developed at the request of the industry concerned to form a common basis of understanding among producers, distributors, and users of the products and to provide a basis for fair competition.

•

O'B-HIBIT-L-32—*O'Brien Industries, Inc, PO Box 72, Caldwell, NJ*—Product Data Sheet 111 covers this new corrosion inhibitor, a companion product to O'B-Hibit, which was designed for use with powdered acids, such as sulfamic acid. The new liquid inhibitor is said to give excellent results when in use with HCl.

The data sheet covers description, toxicity, physical characteristics, shipping and handling data, and use requirements.

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PRECISION MEASURING TOOLS AND INSTRUMENTS—*Scherr-Tumico, 200 Lafayette St, New York 12, NY*—Scherr-Tumico's 1959-60 Guide & Catalog consists of 96 illustrated pages.

This catalog contains complete detailed information on Scherr measuring tools and toolroom specialties, such as a complete line of micrometers, vernier depth gages, snap gages, protractors, dial indicators, ultra-chex gage block sets, height gages, speed indicators, hand tacho-

meters, dynamometers, radius dressers, optical flats, surface plates, magni-ray, and illuminated magnifiers.

Also illustrated is a complete line of Zeiss indicating micrometers, and comparators, Zeiss orthotest, Scherr micro-projector, Cycloptic stereoscopic microscope, Scherr toolmaker's microscope, spur gear tester, Parkson gear tester, Kesel circular and linear dividing machines, profiling, engraving and milling automatics, Cima universal gear hobber, Cornelis thread generating machine, Opto tooling auto collimator, OMT optical rotary indexing table, and Zeiss optical precision measuring instruments.

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PRODUCTS OF THE DOW CHEMICAL COMPANY—*The Dow Chemical Co, Midland, Mich*—This 44-page, 1959-1960 edition of Dow's general catalog lists the properties and uses of some 375 industrial, pharmaceutical, and agricultural chemicals currently produced. The listing includes established products and developmental items.

The new edition features an expanded section on plastics and coatings products. New sections are included on oxazolidinones, automotive chemicals, textile fibers, and the company's Dowell division.

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SHADE CARD FOR WOOL DYEING—*General Dyestuff Co, 435 Hudson St, New York 14, NY*—A new, comprehensive shade card on the dyestuff and Chemical Div's roster of acid dyestuffs, and two basic dyes, has been published by General Dyestuff Co, a sales division of General Aniline & Film Corp.

This new shade card is said to be the most detailed and complete ever to be issued by the company for wool dyeing. Illustrations include swatches of light, medium and heavy shades of the firm's full line of acid dyes on wool, covering 183 products in all.

The card is arranged in such a way that it will facilitate evaluation and checking of dye properties. The contents are grouped into six main classifications, based on the following dye characteristics: light- and wetfastness, leveling properties, and application methods. It is stated that this new arrangement will be found most convenient by the dyer for selection of dyes to be used either alone or in combination, depending on the requirements involved.

The card contains 114 pages of illustrative dyeings and fastness tables, 29 pages of text, and 14 pages of indices. The swatches of heavy dyeings contain 11 effect threads. These offer visual illustration of staining properties of the acid dyes, and also illustrate most of the currently important fibers which are found associated with wool in mixed textiles. This same book is also available as a quick reference in brochure form (GDC-T-347), including all of the text material and fastness rating tables, but the brochure does not include the actual dyed material swatches.

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PROPERTIES, APPLICATIONS, AND A ROOM-TEMPERATURE CURING SYSTEM FOR ATLAC 382—*Atlas Powder Co, Chemicals Div, Wilmington 99, Del*—Two new bulletins cover Atlac 382, a polyester resin. It is stated that the bulletins will be of interest to those industries faced with problems of physical, chemical, or electrical failure in equipment as a result of elevated temperatures or corrosion.

The resin, with certain end-use characteristics approaching those of epoxies, reportedly offers a number of practical advantages, particularly in the fabrication of textile-processing equipment and chemical-resistant tanks, where corrosion may be a factor. The 12-page "properties and use" bulletin also contains detailed instructions on using the resin and includes information on curing at elevated temperature. Also included are tables on chemical resistance, gel and reactivity times at various bath temperatures, properties of glass mat and glass cloth laminates, and viscosity graphs.

An 11-page technical bulletin provides practical information on using the room-temperature curing system for Atlac 382. The system utilizes three components commercially available: 1) methyl ethyl ketone peroxide (catalyst); 2) cobalt naphthenate (accelerator); and 3) dimethyl aniline (accelerator). The concentration of dimethyl aniline is said to always remain constant. Gel time is controlled by varying the percentages of methyl ethyl ketone peroxide and/or the cobalt naphthenate.

The bulletin contains a list of some typical concentrations that will provide specific gel times and a number of full-page graphs dealing with viscosities and gel times of Atlac 382 solutions.

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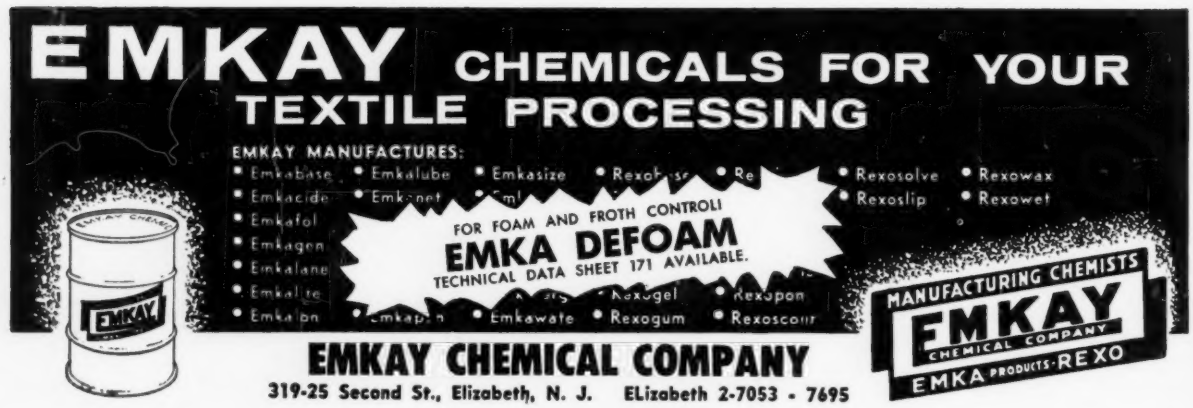
RCI UREA - FORMALDEHYDE TEXTILE CREAM RESIN—FABREZ P-613-M—*Reichhold Chemicals, Inc, RCI Bldg, White Plains, NY*—Technical bulletin T-4 presents information on this monomeric urea-formaldehyde resin in a uniform, smooth paste form. For mills preferring to use a liquid resin, RCI produces Fabrez T-302, a water solution of monomeric urea formaldehyde at 25% solids content (RCI Technical Bulletin T-3).

T-4 offers the following information: specifications, usage, application, drying, curing, washing, use with starch finishes, removal of cured resin, and formulations.


EMKAY CHEMICALS FOR YOUR TEXTILE PROCESSING
EMKAY MANUFACTURES:
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• Emkacide • Emkanet • Emkol
• Emkafol
• Emkagon
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